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Headquarters,
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ARMY Communicator

Voice of the Signal Regiment ❖ PB 11-04-2 Summer 2004 Vol. 29 No. 2

Regiment in Transformation

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Chief of Signal's Comments

The Regiment in Transformation

Regimental Team:

In 29 years of service, I've not seen the Army change as much and as quickly as it is changing today. My intent in this *Army Communicator* is to begin to describe some of these changes and their impact on our Regiment. First, the Army is streamlining its command echelons by removing an echelon, trimming down from BDE-DIV-CORPS-ASCC* (such as USAREUR or USARPAC) to Unit of Action(UA) - Unit of Employment(x) - Unit of Employment(y), referred to as UA, UEx and UEy. Second, the fundamental combat formation is shifting from a division to a brigade. Finally, Signal support to combat formations is adjusting to the shift from division-centric to brigade-centric, with organic Signal formations at brigade (or UA) level.

UA-UEx-UEy: Army Transformation thus far has focused mostly on the maneuver Unit of Action. The UA is roughly equivalent to today's combat brigade, beefed up with slice elements from the division. At the same time, the Army is developing the UEx, roughly equivalent to today's division, but with no "assigned" UAs, or brigades. The UEx consists of a headquarters plus five support UAs (Fires, RSTA, Sustainment, Maneuver Enhancement and Aviation). The UEy is the top echelon and fills a role somewhere between a traditional corps and an Army Service Component Command .

Brigade (UA)-Centric: The basic fighting force of the past has been the division. A division has had organic maneuver brigades with support organizations that typically "chop" to the brigade, such as the Small Extension Node team from the Signal Battalion. There are 33 combat brigades across the force today. The Army's transformation goal is to increase from 33 maneuver brigades to 48 maneuver UAs. Each UA will be structured to fight in a joint environment, sometimes under a UEx HQ, but often not, and with much less task organization.

MG Janet A. Hicks
Chief of Signal

For example, previously "chopped" forces will be organic to the UA. The goal is 48 (almost) identical UAs, with no UA directly assigned to a specific UEx, that can fight as part of any of the ten UEx headquarters, and/or alongside any combination of other UAs. Task Force Modularity, one of the Chief of Staff of the Army's fifteen original focus area task forces, and TRADOC are the driving force behind these changes.

Signal Regiment in Support: CSA has put the entire Army on notice that The Network is the "greatest among equals" of all of the future fighting systems. The Network will be the key enabling capability of our Army. Because The Network will be pushed all the way to maneuver battalion level and be the direct responsibility of maneuver commanders, the division Signal battalion will no longer exist. Instead, each maneuver UA will have an organic Signal company (about 68 Soldiers). Each support UA will also have an organic Signal company of varied size, but about 60-65 Soldiers. The assets of today's division Signal battalions and some of the assets of today's corps Signal brigades will be used to resource these essential organic Signal companies. In addition, each UA will have a brigade S6 major who will serve as the senior signaleer in the UA. Each UA will "own" its Signal company, with assets to conduct combat operations with its battalions, link to other UAs, and provide initial connectivity to a JTF when required. As elements of the UEx arrive, a large Signal company organic to the UEx, commanded by a major, will bring more robust assets for command and control. The top Signal officer in the UEx is the G6, a lieutenant colonel. The G6 will be responsible to provide the network internal to the UEx and to lateral headquarters. The G6 will have authorities that

(continued on inside back cover)

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U.S. ARMY SIGNAL CENTER AND FORT GORDON

Worldwide web homepage address http://www.gordon.army.mil/AC/
E-mail ACeditor@gordon.army.mil

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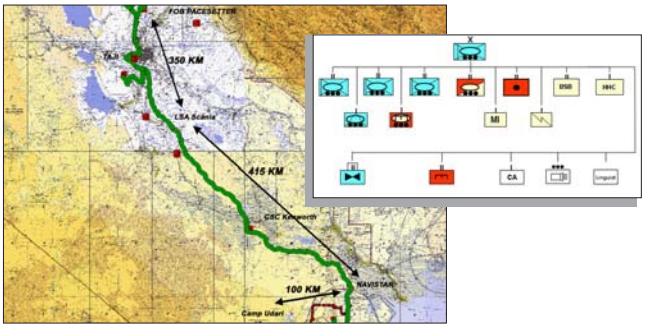

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Official:

JOEL B. HUDSON
Administrative Assistant to the Secretary of the Army
0416102

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Digitally deployed:
Signal transformation in combat

3/2 STRYKER Brigade Combat Team in OIF

by MAJ Paul Fischer

More than four years in the making, countless hours in development, engineering, procurement and fielding, two Combined Arms Training Center rotations, several rapid-fielding initiatives and the 3rd Brigade, 2nd Infantry Division Stryker Brigade Combat Team was ready for deployment.

Arguably the best-resourced, best-trained and most technically-proficient brigade in the history of the Army was prepared to prove the concept of "network-centric" warfare in the toughest test of all, combat.

Though the brigade was named for the much publicized Stryker Infantry Fighting Vehicle; able to rapidly and comfortably deliver Soldiers anywhere in the battlefield, the 'heart' of the SBCT is its integrated complement of command, control, computers, communications and intelligence systems. Digital enablers provide the combatant commander with full situational awareness of friendly forces and the benefit of rapid dissemination of relevant information horizontally and vertically. The phrase "See first, understand first, act first and finish decisively" highlights the power of digital systems at the disposal of the ground commander.

Exercised in the Mohave Desert of Fort Irwin, honed and validated in the forests of Fort Polk, the country of Iraq was the true litmus test where, as COL Michael Rounds, 3/2 SBCT commander states, "We meet the enemy at the time and place of our choosing."

The mission was to provide for a stable and secure Iraqi environment while capturing or killing non-compliant forces; a mission statement that the SBCT was designed to execute. This article addresses the capability of organic signal and C4I systems to support the SBCT in the accomplishment of this mission in the first 120 days of operational deployment.

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Background

The SBCTs signal architecture is built on a Wide Area Network/ Local Area Network Internet Protocol backbone that is networked in what can be described as a "self-contained" structure. As with the Operational and Organizational document that identifies the brigade as a force-projection element capable of self-sustained operations so too is the signal architecture. The network is traditionally viewed as a lower and upper tactical Internet with Force XXI Battle Command Brigade and Below being lower Tactical/Internet and

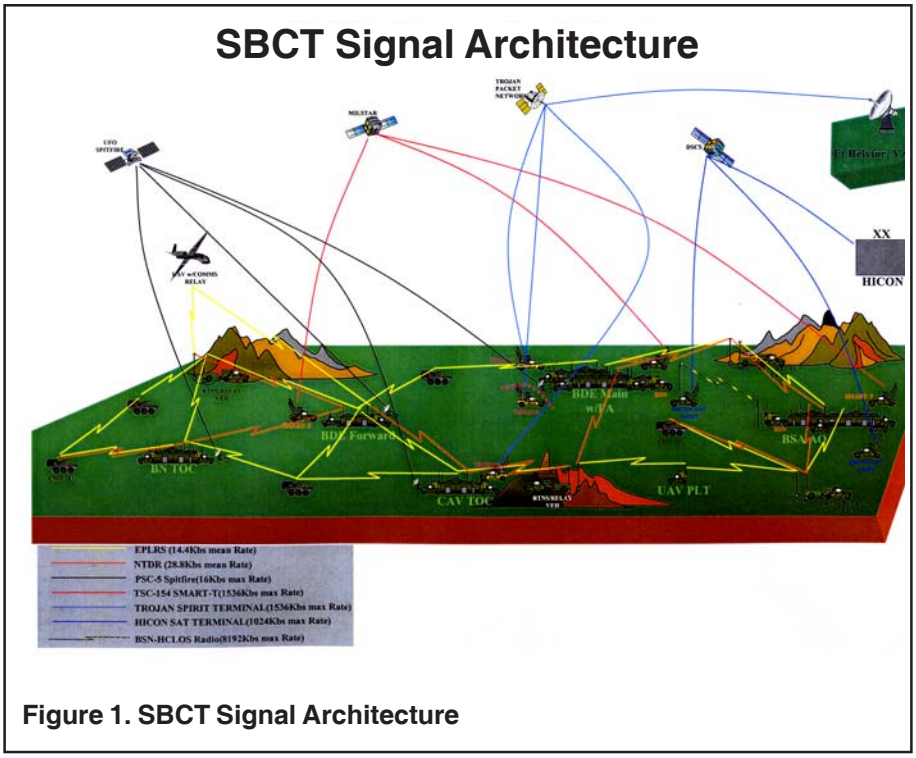

Figure 1. SBCT Signal Architecture

links between battalion and brigade and Army Battle Command Systems as upper T/I. The T/I and WAN is managed by a Network Operations Security Center at the Brigade Tactical Operations Center supported by three Secure Mobile Anti-Jam Reliable Tactical-Terminal assemblages, two subscriber nodes and a forward Networks Operation Center.

In its organic structure the brigade maintains over 713 FBCB2 systems, 735 Enhanced Postion Location and Reporting Systems, 1200 Single Channel and Air Radio Systems, 78 AN/PRC-150 (HF), 26 PSC-5c, 44 Near Term Digital Radios, 450 PRC-148 MBITR, 15 Relay/Retransmission vehicles, three Network Control System – EPLRS, three SMART-T satellite terminals, three Trojan Spirit systems, two Brigade Subscriber Nodes, and one Network Operations Center-Vehicle.

Figure 1 depicts a snapshot of the brigade's signal architecture. Two months prior to deployment from Fort Lewis 13 Blue Force Tracker systems were installed in Stryker CVs and CPs, a CA/Psychological Operations and an Air Calvary Squadron was attached which increased the BFT count to over 46 systems as well as adding additional CNR assets to the brigade.

Prior to and after the successes at the National Training Center and the Joint Readiness Training Center the brigade initiated several signal force modernization projects to improve upon brigade data transfer and relay/retransmission capabilities. One key effort was the Internal Ku Satellite System. The Ku system was conceptualized after the brigade's experience at NTC where battalions were having difficulty sustaining reliable and adequate bandwidth between battalions and the brigade through the NTDR. At the conclusion of JRTC and upon determining the projected battle space the brigade would operate within Iraq, IKSS was approved for implementation into the SBCT architecture. The brigade was

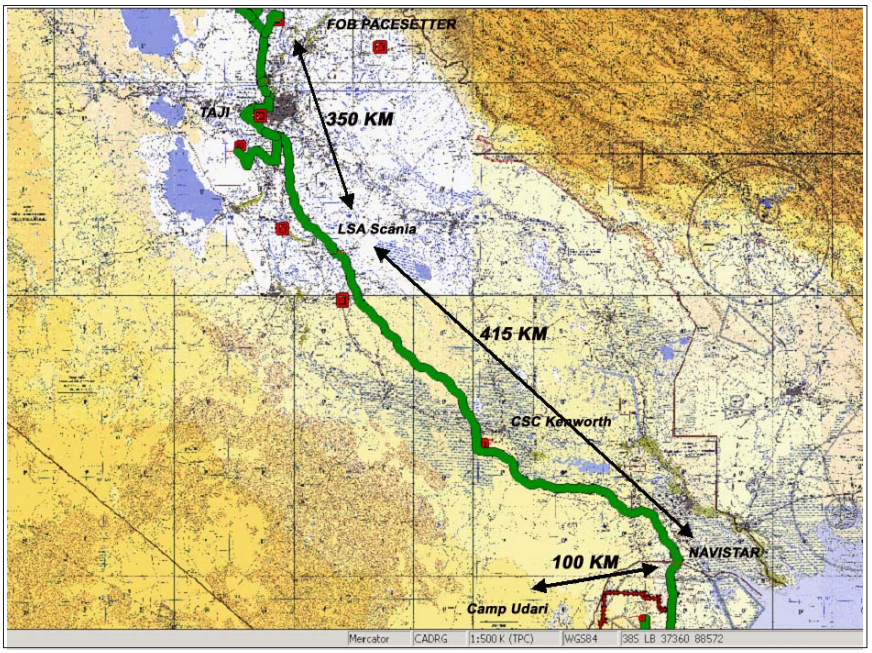

Figure 2.

fielded with 13 IKSS terminals, one per unit TOC, BDE TAC and two spares. The second major force modernization project was the creation of a three "stack" Frequency Modulation retransmission vehicle. Based on the analysis of prior field exercises a requirement existed to provide relay/retransmission vehicles the capability to retrans three separate FM nets. By enabling retrans teams to increase the number of nets retrans'ed there is reduced manpower and force protection requirements in addition to minimizing the risk to soldiers. This concept was validated at JRTC and Headquarters Department of the Army approved the brigade to deploy to Iraq with three net retransmission capabilities.

Operational timeline

3/2 SBCT was alerted for deployment in July 2003 with an Authorized Load Date of Sept. 15. During the preparation for deployment the brigade executed two Pre-Deployment Site Surveys visits to Kuwait and Iraq. Each PDSS addressed requirements and established primary points of contact for reception, staging and onward movement; the brigade S6 was a primary team member for each PDSS. The first Roll On/Roll Off ship departed Tacoma, Wash., Oct. 13, 2003, with the first elements of the Advanced Echelon arriving Udari, KU, Nov. 6, 2003, and the brigade main body closing Nov. 17, 2003. From Nov. 17 – Dec. 3, 2003, the brigade received all deployed equipment from Arifjan, KU, established TOCs, executed a Digital Command and Control Rehearsal, conducted ranges and training requirements as directed by Coalition Forces Land Combatant Commander. During this RSO period the brigade received the IKSS system from PEO-C3T as well as received final refresher training for integration into the brigade's architecture. Dec. 4, 2003, the brigade crossed the

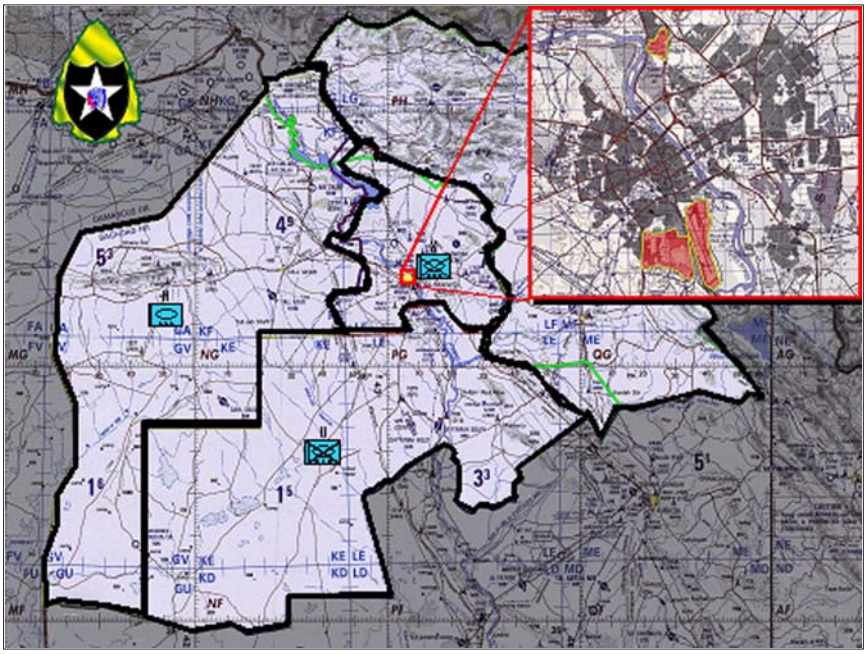

Figure 3.

border into Iraq with a mission to maintain a secure and stable environment under 4th Infantry Division. The brigade convoyed over 900 Km while maintaining voice and digital communications throughout the route into an Area of Responsibility of east Samarra headquartered at FOB Pacesetter (Duluiyah), Figure 2. Combat operations with 4ID began Dec. 10, 2003.

At the conclusion of operations with 4ID the brigade was directed to conduct a transfer of authority with 101st Infantry Division (Airborne) in AO North, headquartered out of Mosul, Iraq,(Figure 3). Jan. 3, 2004, lead elements of the brigade moved into AO North; and Feb. 1, 2004, the TOA with 101st was complete. Elements of I Corps, designated Task Force Olympia, was deployed as Multi-National Brigade North higher headquarters for 3/2 SBCT. The mission of fostering a secure and stable environment remained with an addition of facilitating the transfer of that mission to Iraqi military/security forces.

In conjunction with 101st, 501st Signal Battalion conducted a TOA with a National Guard signal battalion, which assumed the mission of providing MSE connectivity between MNB-N and CJTF-7.

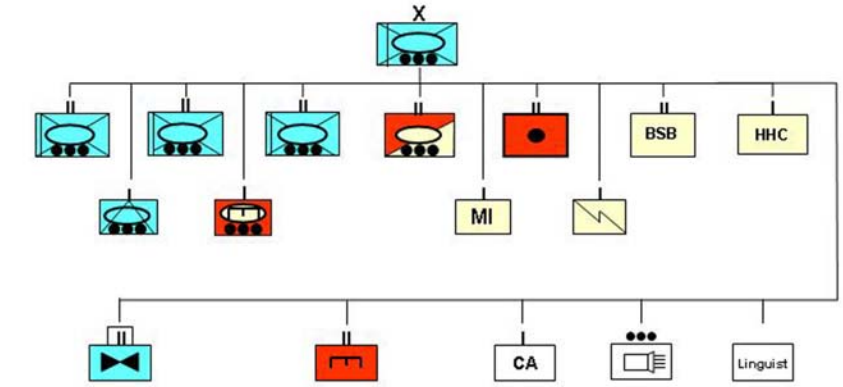

Figure 4. Brigade Task Organization

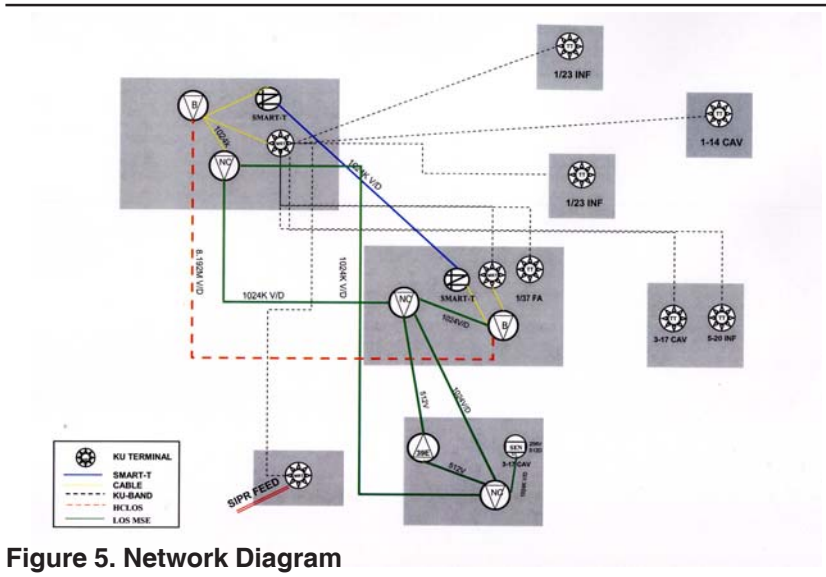

Figure 5. Network Diagram

Because the signal battalion was headquartered in Baghdad, they incorporated a "mini-BATCON" in the BDE NOSC in lieu of a fully staffed element. Effective Feb. 15, 2004, the brigade's task organization and network architecture looked as below (Figures 4 and 5).

Systems

All of the signal equipment fielded to the SBCT was designed to facilitate network data or voice connectivity throughout the brigade, and in some cases externally. Although exercised at the CTCs the true measure of effectiveness was not fully realized until the brigade deployed. The assessment of signal in the SBCT is broken into five sections, systems, software and procedures. Each section addresses the equipment, interaction, integration and architecture. The following

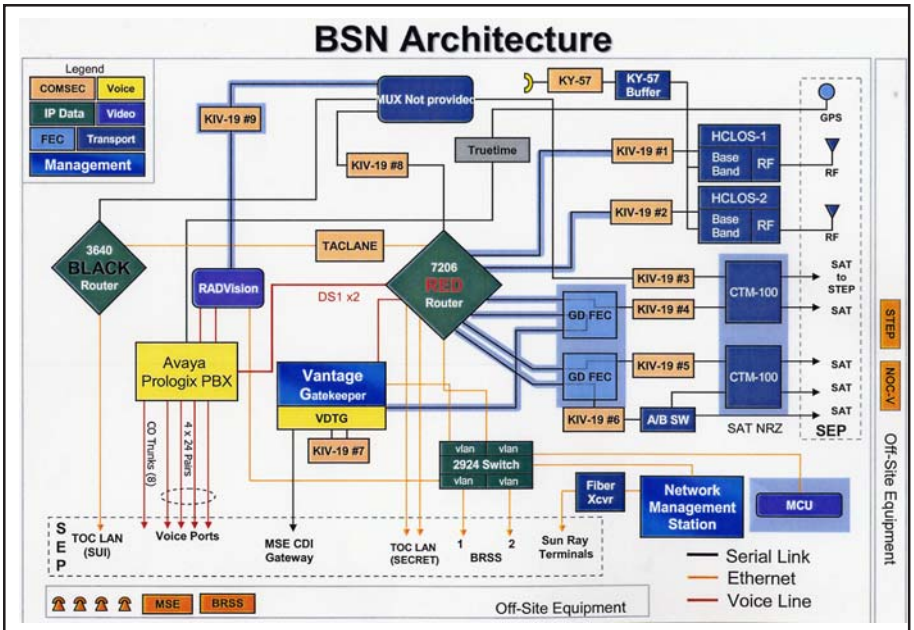

Figure 6. BSN Architecture

is presented by largest node to smallest system, not by effectiveness or utility.

Brigade Subscriber Node

The AN/TYC-25 Brigade Subscriber Node provides switching, routing, transmission and network management and security services within a single shelter. These components form the Stryker Brigade Combat Team communications network infrastructure. The BSN also supports direct connectivity to legacy Army communications (MSE and Tri-Service Tactical Communications System) systems.

The legacy interface is achieved through the CSP-5X Vantage Server (Figure 6). There are two BSNs fielded to the Signal company, one provides support the brigade main command post and the second supports the brigade support battalion. The operational concept is to have the BSNs located where a preponderance of data enters and exits the brigade network.

From the onset of fielding the BSN consistently provided reliable data and voice communications internally to the brigade. Only when integrated with MSE assets from higher did the BSN and more specifically the Vantage demonstrate problems with voice circuits externally of the brigade into MSE networks. Problems were noted prior to the NTC rotation (Certification Exercise I) and the Project Manager responded exceptionally well by fielding the brigade an upgraded version of the BSN originally destined for 172nd SBCT (SBCT-3) during the RSOI period. Vantage Software Version 4.3 was in use at this time. The NTC rotation was executed without significant problems in regard to BSN voice traffic because C2 with higher was predominately via CNR and there was not a substantial MSE network on the "backside" of the network. Still routing and call completion was an issue known primarily only to NOSC and contractor personnel. At the conclusion of the NTC rotation all equipment shipped directly to JRTC. The signal architecture for CERTEX at Fort Polk was virtually identical to that of NTC, thus other than the trouble tickets submitted for minor problems no significant problems occurred.

Vantage Software Version 4.4 was provided after JRTC CERTEX and was implemented for use in a limited in-garrison BSN/MSE Communications Exercise. No issues surfaced during this exercise. Due to an extremely tight timeline for deployment the BSNs were configured for load-out without any additional problems being noted or changes to software. The brigade was confident that the BSNs would perform well in deployment, though questions remained on whether the software had ever been truly tasked and if it would successfully perform in a mature theater level MSE network and traffic load.

Upon arrival into theater the brigade established the network at Camp Udari, KU, for RSO operations. 4th ID provided a communications package to the brigade to facilitate operations and maintain C2 with their headquarters in Tikrit, Iraq. The 4th ID provided a comms package of an Asynchronus Transfer Mode Small Extention Node and SMART-T for division C2. The brigade interfaced into this package via SMART-T (shot from Udari to Tikrit) through BSN 3 (Brigade Main) using Vantage Software Version 4.4 Call completion into the MSE network degraded to a 0 percent call completion rate (i.e. "called party not found," all trunks busy tone, dead air or error tone). The BSN CECOM LAR and chief warrant officer developed several tactics, techniques and procedures to restore legacy voice routing:

- Have MSE Node delete and re-add the (AIL), or the DTG
- Reset the Vantage DTG from BSN
- Restart the Vantage Windows NT operating system
- Or Shutdown the Vantage after which legacy call processing resumes.

Though these TTPs were effective in restoring BSN to MSE call routing it typically reappeared within a few hours. Several trouble tickets were forwarded to the PM at Fort Monmouth and the BSN trouble ticket Internet site (BSN Quickplace).

The brigade completed RSO operations and relocated to FOB Pacesetter to execute combat operations. The BSN – MSE interface was through a 4th ID ATM-MSE network utilizing a SMART-T shot from the BSB BSN into Tikrit, a HCLOS shot

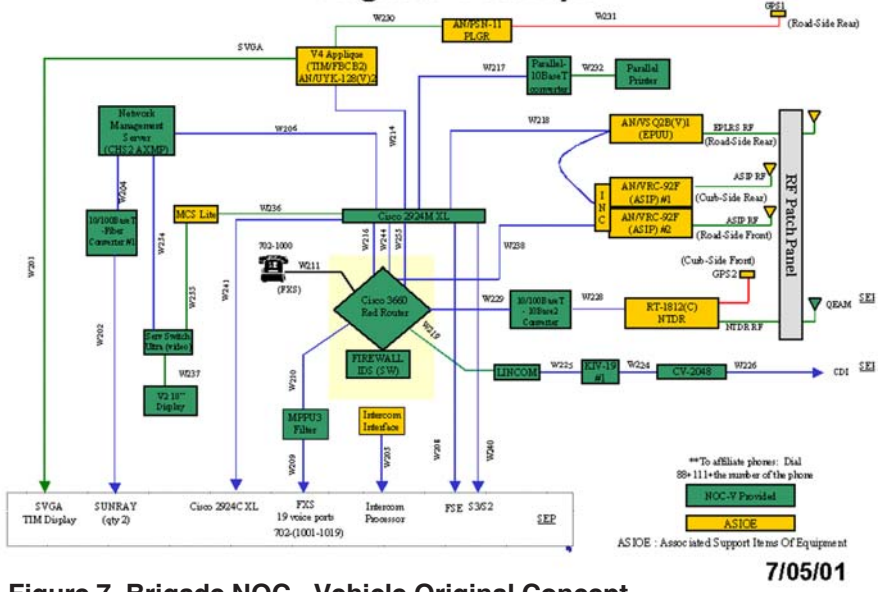

Figure 7. Brigade NOC - Vehicle Original Concept

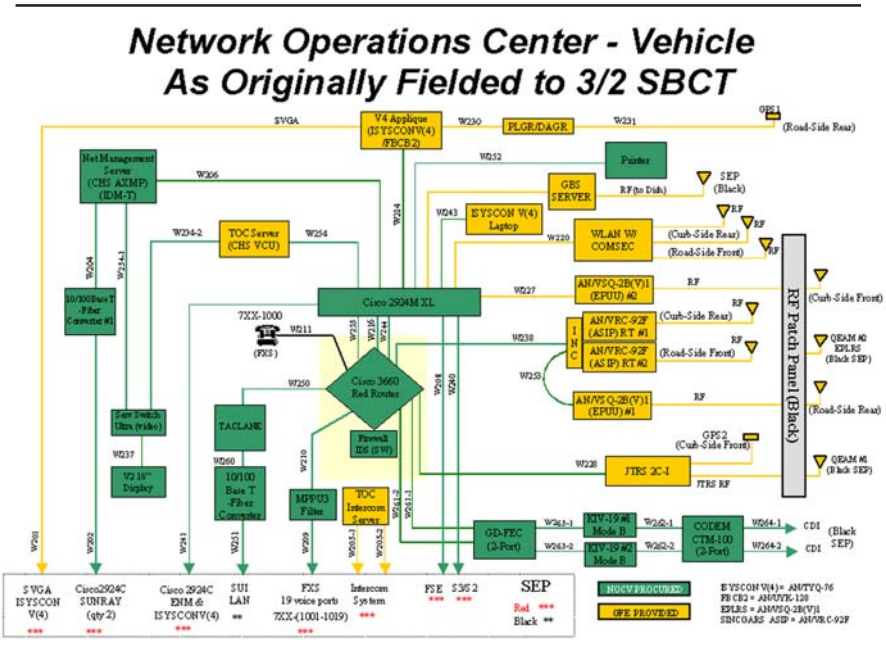

Figure 8. NOC - Vehicle as originally fielded

from BSN 3 to a Node Center on FOB Pacesetter and a HCLOS/SMART-T intranodal network. The links were established and issues with Forward Error Correction card settings and problems with a 4096 Kbs link using an EETGMD into the Vantage were immediately apparent. After a significant period of time working engineering issues with 4th ID technicians, the local node center, and by the brigade's Soldiers the links between MSE and the brigade were stabilized. The 4096 link was reduced down to 2048 Kbs.

Several recommendations were posted on the BSN/PEO website after this first ever "full mesh" of MSE and BSN networks. The most notable recommendation was to provide a 2nd Digital Transmission Group card to the BSN in order to dual home MSE network links. This second card would have provided greater redundancy for voice and data between each BSN rather than a network where a single transmission means provided the only link into and out of the brigade. This would capitalize upon the existing "triple" redundancy of the SBCT intranodal links by providing the capability of terminating two MSE links from higher into each BSN.

The problem with the Vantage remained and was so severe that times the brigade was totally cut off from voice communications both internally and externally of the network for up to four hours. Typically the mean time for Vantage stability was one hour or less, at times the only means of command and control from the brigade to higher/adjacent forces was through email. The severity and frequency of the call routing symptoms became so bad the brigade S6 requested an emergency release of Vantage Software Version 4.5.1 and VDTG Firmware release 2.9. The brigade was advised that all previous Vantage hard drives were suspect because of a difference in the fielded Vantage platform and the Lab Vantage platform that the software was configured.

The new baseline Vantage hard drives were received and installed. Call problems from BSN subscribers to MSE subscribers occurred less frequently and stability improved. Unfortunately because of the operational timeline and unit's movement north to Mosul, evaluation of the new software was cut short. The TTP of hard and soft restart/booting the Vantage and resetting the DTG continued.

Once established at Camp Freedom, Mosul; the brigade interfaced with 501st Signal Battalion and eventually 234th Signal Battalion (NG) via THSDN-MSE through BSN/CX-11230, and by BSN/HCLOS (226 mode), using Vantage Software Version 4.5.1 and VDTG

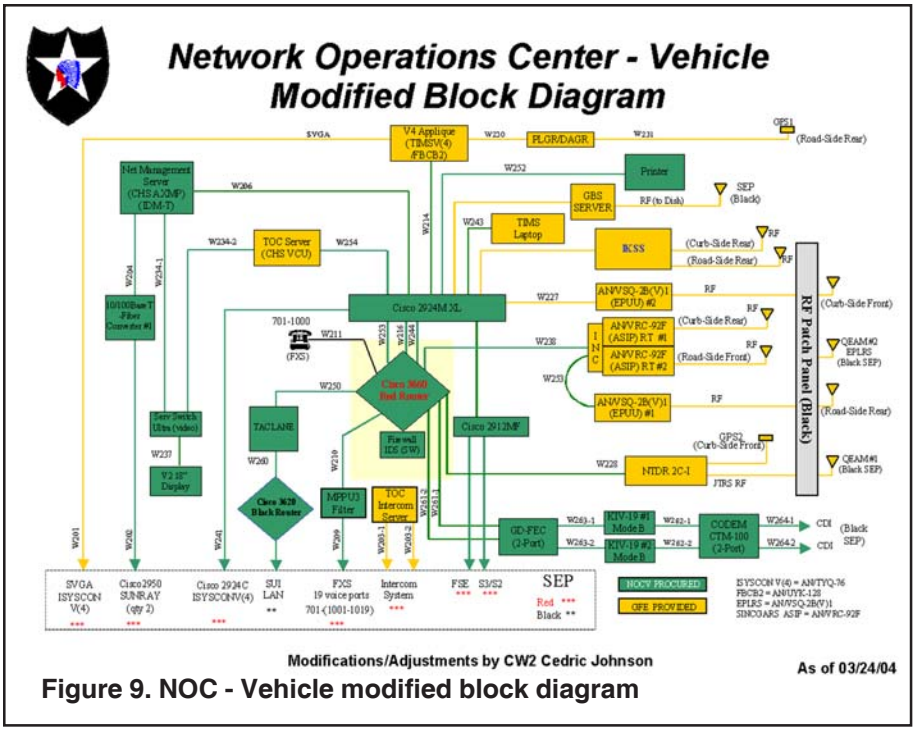

Figure 9. NOC - Vehicle modified block diagram

Firmware release 2.9. Call routing and completion from BSN subscribers to MSE subscribers was averaging 65-70 percent, lasting days instead of hours. The noticeable difference in this scenario was when calls from the BSN would not process, the MSE switch could still force dial through the network a majority of the time. Over a two-and-a-half month period of stability in Mosul the Vantage switch continued to not function with the reliability expected between the MSE and SBCT networks, resulting in the brigade establishing local MSE phone lines into command posts where MSE nodes were within wire range. This obviously provided some means of voice redundancy when calling external of the brigade to other prefixes or area codes; though calls being attempted into the brigade network was never an issue. Of particular note is intra-brigade Voice Over Internet Protocol call processing has operated without issue during Vantage/legacy voice routing problems.

In mid April the brigade was provided a new software and firmware upgrades to the Vantage. The software, version 4.5.2 and VDTG firmware cards (Ver. 2.10), were installed in sequence with BSN #4 (Brigade Support Battalion) first getting the upgrade followed by BSN #3 (Main TOC). The improvements to call routing and processing between MSE and the brigade were immediate. To date the Vantage has not required a soft or hard re-start, and call completion between MSE to brigade and intra-brigade are 95-100 percent.

Although the BSNs most significant problem was the Vantage performance, the data and intranodal voice capabilities have performed well throughout the deployment. The High Capacity Line-of-Sight radio system and upgrades to the General Dynamics-Foward Error Correction and CTM100 have proved to be extremely beneficial toward mission accomplishment and relative ease in establishing internodal connectivity. As with any initial concept and pre-product system there is room for improvement. Specifically the BSN would benefit from the addition of a Promina multiplexer. The shelter is pre-wired for the installation of the Promina and would add exceptional flexibility and data termination without the reliance on external support. Consideration needs to be made to retrofit the fielded SBCTs with a Tactical Switch Node or Single Shelter Switch type internal architecture that takes advantage of updated commercial-off-the-shelf switches and routers with enhanced capabilities consummate with the tactical WAN improvements. Additionally, the BSN is fielded with a Brigade Remote Subscriber System that has never provided any utility to the network. The objective of facilitating expansion of voice and data links inter-brigade has never proven to be a requirement. Recommend that future BSNs are not fielded with Brigade Remote Subscriber System or other like enabler. Other considerations are noted below.

- The BSN needs a (call completion rate report), such as MSEs R1 through R6 reports, using the current WMI to inform the operator when call completion is below a certain percentage (Traffic Metering capability)
- The BSN's Vantage needs the flexibility to establish two legacy internodal links per system
- The CTM 100 LCD display needs a light source of some type
- Installing the Promina, would enable the brigade to negate dependence on legacy signal elements to provide services such as Non-secure Internet Protocol Router Network/Secure Internet Protocol Router Network and Defense Switched Network and provide a joint interface capability to the SBCT
- WMI is a good tool however some operator functions should be more flexible to reflect the actual working network configuration
- The router/Vantage/GD-FEC cables need to be included in the ASL on hand for the unit
- The GD-FEC housing unit needs to be accessible from the top of the case so the card can be inspected for proper settings without removing the delicately designed card (these cables are potentially a single point of failure for data traffic to higher)
- Operators and mangers need additional training on Vantage/PBX H.323 call handling

(specifically regarding "digit manipulation" within the BSN voice routing protocols)

- HCLOS (226 Mode) works well interfacing MSE
- The data interface with MSE worked well once routing protocols and procedures were configured
- Consider integrating a Ku satellite system (Initial Ku Satellite System into the shelter -- see below for space saving)
- Remove the BRSS from the BSN fielding concept
- De-install one HCLOS radio from the BSN and provide it in a transit case IOT provide more flexibility to the network and enhancing connectivity with adjacent units as a stand alone radio.

NOC-V

The Network Operations Center-Vehicle has proven to be one of the most valuable signal shelters on the battlefield for the SBCT. It has consistently provided the critical link both internally and externally for the brigade during NTC, JRTC and now in deployment. In its early stages the NOC-V was conceptualized as the primary communication planning and operations cell, integrated into the brigade Main TOC. This concept rapidly faded when the brigade moved toward a three CP structure of the Main TOC (TOC A), a Forward TOC (TOC B), and a BDE TAC. Initially the NOC-V and a SMART-T was a component of TOC B, and remains its primary mission, though the brigade further developed a "forced entry" communications platform; named the STRYKER Communications Package. The STRYKER Communications Package was used as a C2 enabler for the TAC. Under this new operational concept the NOC-V's true value was realized and the brigade's communication architecture bore a new life and flexibility.

The original O&O block diagram/architecture of the NOC-V is depicted on Figure 7 and was envisioned as a fixed node that extended the C4I of the brigade. The NOC-V in its original form was a potent C4I platform incorporating FBCB2, Tactical Internet Management System, NTDR, SINCGARS, 20 telephones, SIPRNET and BVTC capabilities. Even in its original form, the NOC-V provided the commander an exceptional tool for C2. Under the original concept the NOC-V was limited to supporting TOC A and the IP addressing scheme reflected this vision. But the brigade viewed the NOC-V as an extremely flexible communications enabler for the commander, capable of providing high bandwidth data, voice and imagery at any decisive point on the battle space in a very limited amount of time. Prior to CERTEX I at NTC the brigade was fielded a newer version of the NOC-V that increased flexibility and increased the number of links that could be terminated (depicted on Figure 8). During the CERTEX II rotation at the Joint Readiness Training Center, the NOC-V was used to support maneuver battalions and the brigade TAC. With this capability realized and proven, the brigade commander had the flexibility to deploy his command CPs (TOC A, TOC B and TAC) based on the fight, placing an extremely robust and network capable node anywhere in the brigade's AO. During, the deployment to Iraq the NOC-V package was used to support the Forward TOC (TOC B) on initial movement north. Later the NOC-V was used to support the TAC on the brigade's first assault mission in Iraq and again on the movement to Mosul. The NOC-V provides the warfighter voice, data (NIPR and SIPR) and video communications and constant Situational Awareness between his battalion commanders and CPs anywhere on the battlefield.

Typically the NOC-V deploys with an associated SMART-T assemblage to provide intranodal links to the brigade Main CP or the BSB; but with the advent of the IKSS and subsequent installation of the system into the shelter, as well as a host of other minor modifications (Cisco 3620 router, FXO/FXS cards, dial peers) the NOC-V had two redundant brigade intranodal satellite links to facilitate command and control and a modified block diagram (Figure 9). The installation of the TOC B IKSS made the NOC-V a true standalone C2 multiplier for the brigade commander (Figure 10-12).

The NOC-V's flexibility is in its ability to operate multiple VLANs and the two subnets programmed in the routers and switches. The multiple subnets allow the NOC-V to have its management LAN separate from the TOC LAN. This way the NOC-V is part of the WAN network and not limited to supporting Forward TOC. The ability to place this vehicle anywhere in the brigade makes it the most valuable asset in the brigade's communication architecture.

During the rotations to NTC and JRTC as well as the deployment to Iraq the ability to interface directly with MSE was a significant limitation. The NOC-V is not the signal-planning cell for the brigade as originally thought and had achieved a larger operational role in combat operations than initially envisioned. The NOC-V has always been called to push forward in the battle space initially to establish communications in the brigade's AOR. So the ability to interface with MSE would have been the optimal solution. A VANTAGE switch installed in the shelter would give the network planners the flexibility to sequence assets into to the AOR as well as giving the brigade the ability to deploy any of its CPs into theater and still interface with a HICON via MSE. If implemented, the NOC-V must be retrofitted with an option for voice Long Locals as part of the upgrade.

The NOC-V needs another organic means to interface into the Brigade network and/or MSE other than SMART-T or IKSS. Specifically the NOC-V needs possess the ability to establish Line-of-Sight radio links. The BSN already has the HCLOS radio internal to its shelter and "baselining" the brigade with a common high capacity radio system in all primary signal nodes would facilitate a tertiary means of estab-

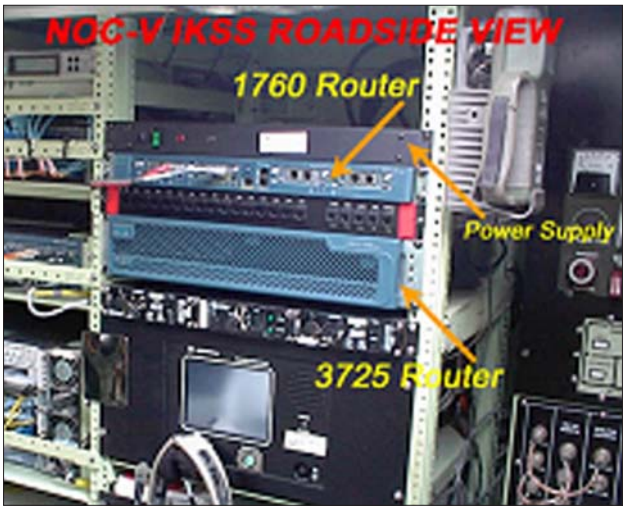

Figure 10.

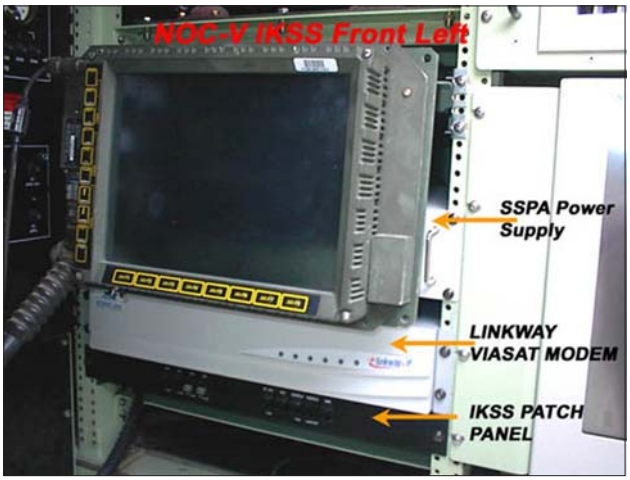

Figure 11.

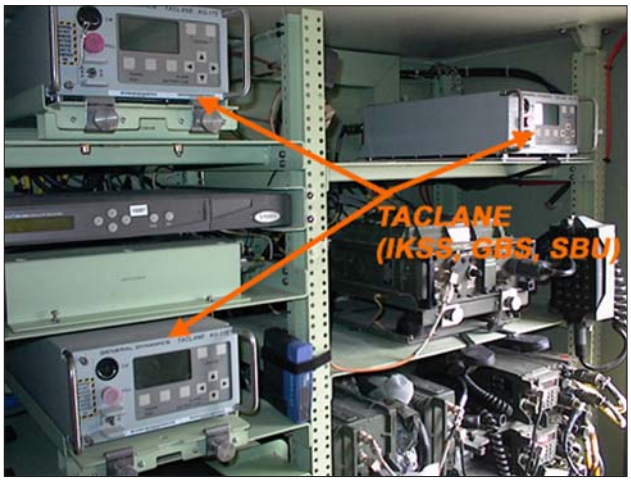

Figure 12.

lishing connectivity. The HCLOS radio has the ability to push data rates up to 8.192M; this will increase the bandwidth between the two main TOCs (TOC A and TOC B), as well as into the BSN located at the brigade support battalion. With the ability to interface with AN/GRC-226 radio, the HCLOS radio would enable seamlessly interface with legacy MSE networks and the NOC-V.

The NOC-V provides sensitive but unclassifed data to the users via KG-175 (TACLANE). This was a much-needed upgrade, but the next step is to add an SBU router in the shelter. Currently, we have installed a 3620 router in the NOC-V. The router provides the ability to do DHCP as well as the ability to NAT when fewer addresses are available. The shelter also had a SBU port installed in the SEP panel. The connection is BNC; the issue with BNC is that we only use CAT 5 cable or fiber. So, putting a RJ-45 or a fiber connection on the SEP panel instead of BNC would provide seamless connectivity. The concept is already in the BSN and should be implemented during the next NOC-V upgrade.

As a component to upgrading the NOC-V at Fort Lewis a Global Broadcasting System was installed. Though during deployment the GBS was never used because of the power of the rest of the brigade's network to obtain the same information (Trojan Spirit, CNN, Armed Forces Network, web-based products) over other organic systems. The GBS is not doing anything for the brigade installed in the shelter. As a brigade, we need the capability, but in the dismounted configuration and not installed in the NOC-V. The GBS needs to be a component of the brigade Main TOC in addition to saving weight and room in the NOC-V for other useful upgrades such as IKSS.

In the final set for the brigade at Mosul, the NOC-V has been largely static though provides a valuable mission as a spoke for Intial Ku Satellite System, a secondary C2 node for network changes involving the BSNs and a network management/troubleshooting platform. Typically the NOC-V and its associated SMART-T can be configured for mission and prepared to support any operation within the brigade's battle space within one hour. As the operational concept of the SBCT evolves the NOC-V must continue to develop into the premier platform for the signaler and more importantly the warfighter on the ground.

Secure Mobile Anti-Jam Reliable Tactical-Terminal

Three SMART-T are fielded to the brigade and are closely associated with TOC A, TOC B and the BSB; and provide the brigade an intranodal backbone for data/voice traffic. The SMART-T is a Ku-band satellite system capable of Low and Medium Data Rate (LDR/MDR) links via the MILSTAR constellation, supporting data rates up to 1544Kbs (typically operating 512 and 1024Kbs). As mentioned the brigade has used the SMART-T and the NOC-V in a STRYKER Communications Package to support the brigade commander's TAC. To date the SMART-T has consistently provided

reliable connectivity to the brigade. Once deployed the brigade experienced issues with the availability of satellite hops in theater, which effectively limited the brigade to only two of three terminals being in system at any one time. Due primarily to the saturation of SMART-T assets in Iraq (4th ID and 1st Armored Division) the brigade was limited to allocated hops and the subsequent data rates were limited to 512 and 1024Kbs.

During operations in Samarra the network structure for the SMART-T was 1024Kbs from TOC A to 4ID and 512Kbs from TOC B to TOC A. This architecture benefited the brigade by enabling employment of the SMART-T as both an intra-brigade and internodal (to 4th ID) communications system. Once the brigade moved to its final set in Mosul the SMART-T supported intranodal link between TOC A and the BSB at 1024Kbs and a 512Kbs link for the NOC-V.

Prior to deployment AAR comments from 4ID and 1AD indicated severe equipment reliability issues with the SMART-T primarily related to the Medium Power Transmitter and cooling fans on the transmitter "buck." To date the brigade has not experienced similar or any equipment issues, though the cooler weather during the initial deployment may have been a factor.

Of note was the employment of the SMART-T and the management of the MILSTAR "hops" during deployment. During CERTEX I and II, the brigade used all available signal assets to take full advantage of the flexibility of links within the brigade. Specifically the SMART-T was maneuvered to support a battalion during NTC, JRTC and during ground assault convoy operations from Samarra to Mosul. The brigade created a transit case based communications system (Trans Stack) that enabled the termination of a SMART-T link for data and voice, managed from the BSN or NOC-V. The Trans Stack consisted of a KIV-19, GD-FEC, CTM-100 and Cisco 3620 router; there were two develop by the brigade. This stack in conjunction with a SMART-T provided end users NIPR, SIPRNET and phone connectivity into the brigade network. This "mud box" voice/data system enabled the brigade to move one assemblage (SMART-T) anywhere on the battlefield to provide emergency or temporary connectivity a C2 node. But as with any satellite link the issue of bandwidth must be addressed.

Due to the proliferation of SMART-T assemblages in theater the brigade's requirements added strain on an already saturated MILSTAR network. This was evident with the limited number of links that were allocated to TOC A and TOC B, throughout the deployment, though requested numerous times, two links (1024 and 512Kbs) was all that was provided. Eventually the link structure was modified to three links at 512Kbs each.

The SMART-T has performed exceptionally well throughout deployment. Some physical improvements to the assemblage would enhance operational capability. Enabling an auto tracking memory function would improve satellite acquisition time. When shutting down the SMART-T and reinitializing the acquisition process, the SMART-T needs to possess the ability to "remember" the last know location of the MILSTAR satellite in relation to GPS/long/lat position. This would preclude a start-up, acquisition, and "lock" of the satellite lasting 20 minutes or more; the Trojan Spirit terminal has such a capability enabling restarts and acquisition of less than five minutes. Frequently the brigade's SMART-Ts were knocked off of the bird by other terminals that obtained a higher priority for links. After some investigating it was determined that management of the MILSTAR constellation and terminals enabled operators and MCPTI managers to configure images "on the fly" external of the Satellite Access Request process which resulted in certain links to lose priority. This procedural issue resides in the management TTPs of the theater and is not with the assemblage though consideration should be made for the level of reconfiguration that can be accomplished at the terminal level.

As mentioned the SMART-T is an exceptional workhorse for the intranodal links within the brigade (and in some cases to higher) though due to the saturation of terminals and limited segments available on the MILSTAR constellation recommend that the community revisit the implementation of a tri-band satellite system. The flexibility and utility of a tri-band satellite terminal would significantly enhance the capability of the brigade to establish connectivity both internally and externally of the network (Phoenix Tri-Band). Consideration should be made to incorporate both tri-band and SMART-T systems in the brigade. This capability in conjunction with the installation of a Promina in the BSN would provide a true multi-functional terminal that could adapt to virtually any theater level satellite footprint and facilitate joint connectivity.

Internal KU Satellite System

At the conclusion of CERTEX I at the NTC the brigade identified a data "gap" between the power of the automated systems and the limited digital transmission capabilities fielded to battalions compared with the relatively high bandwidth capable systems available to the brigade headquarters. The brigade possesses incredibly powerful intelligence collection assets, video, voice and SIPR/NIPR providing the brigade commander virtually limitless situational understanding and awareness but a data "bottle neck" exists from the brigade down to battalions. The digital data radio (NTDR) was incapable of transmitting the volume of digital traffic at an acceptable speed and with reliability to the battalions.

Days after CERTEX I the brigade S6 began working with Battle Command Battle Lab-Fort Gordon and the Program Executive Office – Command, Control and Computers, Tactical to develop a

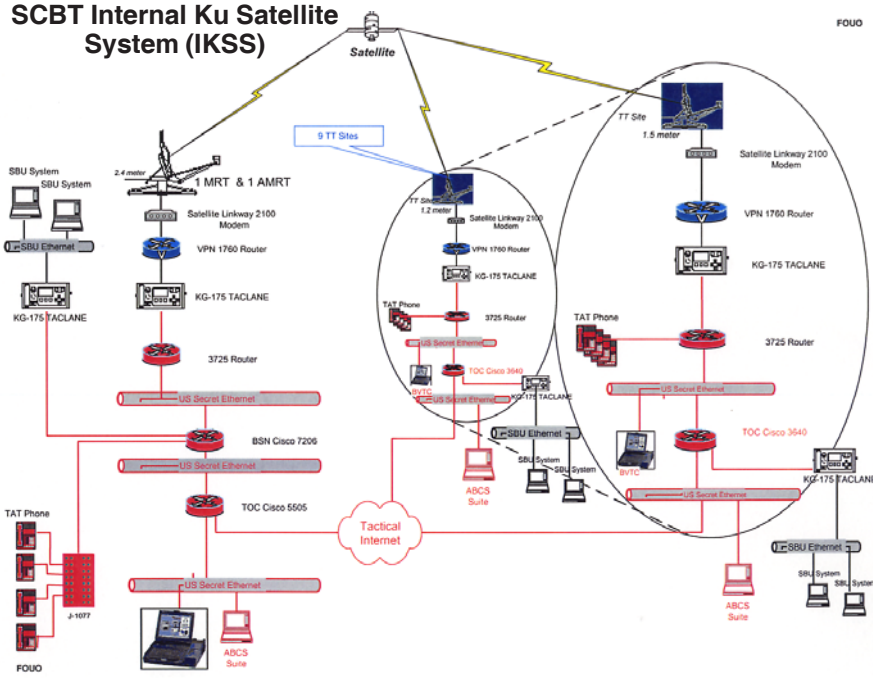

Figure 13. SCBT IKSS

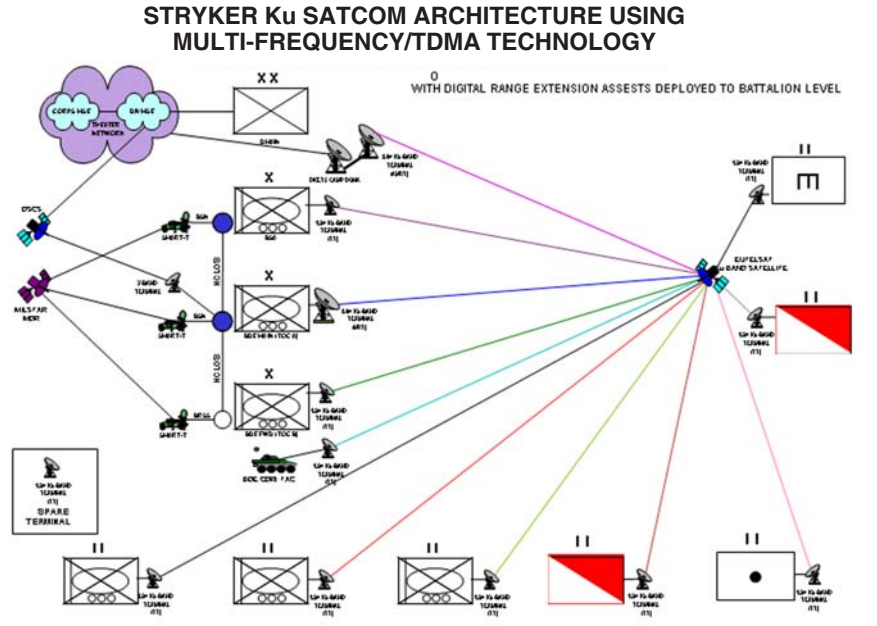

Figure 14. STRYKER Ku SATCOM Architecture

potential solution. Two weeks (July 31, 2003) after the conclusion of CERTEX II at JRTC a rudimentary concept of a TDMA Ku satellite system based on Linkway network secured with KG-175 TACLANEs was developed and presented to the brigade. After an Operational Needs Statement was approved and funding secured through Headquarters Department of the Army, procurement was initiated through Data Path Inc. Training of Signal Soldiers in the brigade was initiated on Sept. 8, 2003, at Fort Lewis with surrogate Ku systems. Much of the final material solution and technical architecture was still forming while the brigade was receiving training from PEO-C3T, BCBL(G) and Mitre. Once training was complete the surrogate systems were returned to the manufacturer and the brigade deployed to Kuwait with the understanding of receiving the IKSS in theater (the reason for this was the long lead times for certain satellite components). Associated BVTC and TACLANEs for each of the 13 systems deployed with the unit. The engineering, approval, procurement and training process was truly remarkable when considering a timeline of under 90 days from concept to employment in the field, a first for the signal community.

The 3/2 SBCT IKSS operates under a hub and spoke concept with two Master Reference Terminals that control 11 Traffic Terminals with over 7 Mbs aggregate data rate shared between all end stations; though TTs are limited to 800Kbs uplink. Each TT is comprised of a Linkway modem, Cisco 1760 VPN, KG-175, Cisco 3725 and UPS in a transit case with a 1.5 meter satellite dish. Set up time is typically 45 minutes or less. The MRT is essentially a TT with the addition of a second Linkway modem, ViaSat combiner and Sun system computer management terminal hosted from a 2.4 meter satellite dish. Only one MRT can control the Linkway network, thus the second MRT is traditionally identified as an AMRT (Alternate MRT). The employment concept and component integration is depicted left (Figures 13 and 14). Each IKSS terminal is fielded with one TACLANE for encryption of the Ku link into SIPRNET, tunneling of NIPR through a second TACLANE was achieved by harvesting an existing TACLANE that resided in each S1/S4 vehicle within the battalions. This leveraging of INE assets internally of battalions was not possible for attached units (i.e. Air CAV) that did not have organic TACLANEs. As a result "analog" units were resourced with two TACLANEs (one from the fielded IKSS and an additional TACLANE from one of the spare systems). Ostensibly this created a capability

shortfall if the brigade ever had to employ with spare IKSS terminals.

Early in the development and training of the IKSS the brigade began the process of obtaining accreditation of the IKSS network for SIPR and NIPRNET traffic. The primary issue in regard to encryption was a KG-175 providing "bulk encryption" for a tactical network over a commercial circuit. After working with theater and Defense Information Systems Agency to validate the security protocol and acknowledgement of the TACLANE as a primary encryption standard, the brigade was approved to exercise the IKSS in theater.

Once fielded in Udari, KU, the importance of IKSS became immediately apparent in providing battalions wide band data links to the brigade C2 nodes. Each battalion received a set number of NIPR IP address (approximately six IPs per battalion) based on an IP pool provided by higher and a total of 16 SIPR IPs were dispersed throughout the IKSS network; additionally each TT facilitated four VOIP "red side" phones (hosted off of the BSN) and an "orderwire" line. Though the IKSS provided immense capability to the battalions the actual data that passed through "gateways" out of the brigade was predicated on what was being provided from higher. This issue along with Vantage inconsistency and problems with MSE call outs and link stability resulted in, initially, IKSS being questioned by brigade leadership whether it was operating as advertised. This perception was wholly based on the systems that facilitated inter-brigade network connectivity (MSE, Vantage) and not necessarily the IKSS. What must be understood is IKSS as a transmission medium and data path that is dependant on the network that is being "passed" to other customers in the network. Once the Vantage and MSE stability improved and the capability of the system fully realized; the brigade fully endorsed IKSS as the most valuable upper T/I asset for network access and the warfighter.

Early in deployment the brigade worked with PEO-C3T to devise a "sanctuary" IKSS node outside of the brigade's battle space. Given the mobility of the brigade and the changing mission sets placing a MRT in Camp Doha, KU, connected to a DKETS would provide SIPRNET on demand to TTs as well as a control/management location external of the brigade. After a significant period of time CFLCC approved the network accreditation to integrate the IKSS into the theater network. Soon after the brigade agreed to position a MRT with PEO-C3T and Data Path Inc. support staff at Camp Doha, subsequently connecting the IKSS into the DKETS. This network connection enabled the brigade receive SIPRNET connectivity external of MSE theater assets and significantly improved the speed and reliability for the brigade.

Overall the IKSS has been the biggest C2 force multiplier within the brigade and has demonstrated a capability that must be included in all follow-on SBCTs as well as signal transformation architectures.

Overall the IKSS has been the biggest C2 force multiplier within the brigade and has demonstrated a capability that must be included in all follow-on SBCTs as well as signal transformation architectures. The brigade successfully demonstrated the feasibility, viability and flexibility of IKSS for any unit operating in a non-contiguous battle space. The use of commercial satellite networks lessens the impact upon military satellite networks and in some cases can provide a "cleaner" and more reliable footprint in an AO. Being the first unit to ever receive and use a Ku satellite system to the extent that the brigade did and the speed at which it was developed and deployed there were several recommended changes that the brigade has noted. Most of the changes have been addressed by PEO-C3T for inclusion into follow-on Ku solutions for 101st ID (A) and 3rd ID.

Specific to IKSS, all systems should be fielded with E100 model TACLANEs and potentially incorporation of Advanced Encryption Standard Cisco routers. Such a configuration may negate the need for a second TACLANE for "tunneling" NIPR (as in the current configuration). Using an AES router could potentially facilitate a NIPRNET path directly from router to router and a single TACLANE would tunnel the SIPRNET. Each IKSS terminal provides four 2-wire VOIP phones for voice services, though as the deployment has progressed it is evident that end users require additional phone capacity. Specifically future systems should provide for at least 10 VOIP phone ports per a system (operations and future expansion). All TTs should be fielded with a satellite phone (Iridium) in order to place calls to the satellite controller during registration of the satellite.

This empowers the operators to set up the satellite virtually anywhere in the world with the confidence of successfully registering on the satellite without external communications support. All TTs need to be fielded with an auto-acquire and auto tracking satellite dish. Though set up times are usually under 45 minutes, having such a capability would enable the operators to complete set up of the modem, routers and TACLANE while the dish acquires the satellite which would facilitate set-up times of under 20 minutes. In addition to an auto-track/acquire dish for fixed locations serious consideration should be made to incorporate this technology on the Stryker CV platforms.

The brigade conducted some analysis with PEO-C3T on the feasibility of placing an auto-track/

acquire dish on a Stryker, the size, weight and power requirements were beyond the thresholds of the vehicle. Potentially as improvements are made to mobile satellite systems, such problems may be overcome. The concept of a sanctuary IKSS should be expanded where all MRTs are placed in a safe haven where access to STEP capabilities could be ported into the network (SIPR, NIPR, Voice/DSN). This would allow for quick deployment of the brigade worldwide in virtually any size or composition without a reliance on externally provided "forced entry" communications systems for support. Finally in addition to integrating the IKSS into the NOC-V platform, engineering to install IKSS equipment into the BSN would parallel the logic of incorporating existing routers, TACLANEs and switches to fully leverage the power of both the BSN and the IKSS rather than two separate systems. This could be accomplished by transit case mounting one of the HCLOS radios in the BSN and replacing it with IKSS components.

NTDR

The Near Term Digital Radio was originally fielded to the SBCT to enable Army Battle Command System information to be passed from brigade to battalions. As referenced with the IKSS this concept while still valid, did not meet the requirements of the commander on the ground. Of the 44 NTDRs fielded approximately 10 have been in operation at any point and time during the deployment. Stryker CVs have used the NTDR during operations in order to maintain an ABCS link with a Command Post; but typically NTDRs have been used as a link for Combat Training Command Post to the Brigade Support Battalion within a 3 km footprint on a Forward Operating Base. All NTDRs have been operating on "wide band" mode.

Several units used the NTDR for connectivity from their TOCs to relay/retrans sites to CV Strykers. The longest LOS link obtained during deployment was 40 km from a battalion TOC to a relay/retrans site. The NTDR does provide minimal data processing to CVs and has been beneficial for ABCS Common Operational Picture development though that is the sole purpose for the NTDR, not passing large data files.

A TTP that the brigade developed during NTC/JRTC was in order to achieve "in net" status with the radios all of the antennas must be on an equal "plane" in a three-dimensional space. Essentially all the antennas should within a height tolerance of equal to +/- 2 meters and 10-20 km apart in order to achieve a good link (during NTC and JRTC the brigade consistently achieved 12 km links, the longest being a 45 km link). This was exceptionally hard to achieve in a deployed battle space that was 200 x 400 km and where a majority of forces were occupying cities or air bases. With such an AO the brigade used the NTDR in a reduced role and used it primarily as a short-range link for elements within range of a TOC. In fact it could be argued that the NTDR and the IKSS created a subset of the upper T/I with the NTDR filling a role as a "low level" or "degraded" upper T/I and the IKSS providing true upper T/I connectivity.

In regards to the equipment the antenna and mounting base needs to be re-engineered to be more durable in a field environment. Specifically the antenna base o-ring consistently failed resulting in the antenna becoming "off center" and not 90 degrees in orientation to the ground. Additionally the contact pins internal to the antenna frequently broke leading to intermittent data links.

Overall the performance (since its fielding) of the NTDR has been below expectations, especially in light of the data requirements of the brigade. The relatively low data rate (~28.8 Kbs), difficulty in obtaining a reliable link, large battle space and emphasis on other systems has resulted in the radio not being extensively used during deployment. Finally the NTDR is not longer a viable system for the warfighter to solely rely on for digital connectivity. The expectations of today's commanders and Soldiers demand a system that provides high data rates, consistent reliability and mission flexibility.

Serious consideration must be made whether to continue this program beyond the current fielding and replace it with a Beyond-Line-of-Sight high data system. If this program does continue the waveform should be replaced with the next generation Joint Tactical Radio SystemWideband Network Waveform in order to better facilitate higher data rates and longer ranges.

EPLRS/FBCB2

By far the most valuable system fielded to the brigade for the commander and Soldiers on the ground has been EPLRS/FBCB2. The SBCT is fielded with over 713 EPLRS/FBCB2 and possess 3 Network Control Station – EPLRS assemblages. Prior to deployment the brigade initiated a change to the address database to account for unit attachments in anticipation of receiving changes or additions to the task organization. The significance of these changes was the depth and speed at which the database was modified by engineers at the Program Manager and testing by the Consolidated Training Support Facility at Fort Hood. The database change added over 200 roles to the addressing list and encompassed the following:

- Military Police
- Special Operations (Ranger/Special Forces)
- Lift and Attack Aviation
- Civil Affairs and PSYOP
- Wingmen (Platoon)
- 1SGT
- Mission Data Replicator
- ABCS-Light (L) platforms

Prior to deployment and as a component to the new database the brigade fielded FBCB2 version 3.5.4.

Since deploying the brigade has consistently maintained over 500 FBCB2 systems in network spanning the entire battle space. During RSO

activities at Udari, KU, the brigade conducted a Digital Command and Control Rehearsal to validate all organic C4ISR systems; the commander's intent was to ensure all FBCB2s were fully operational. All hard drives were loaded with 5-meter imagery of the CENTCOM AOR with 1-meter imagery for areas of interest.

The movement from Udari to Samarra was an 800 km movement where the brigade implemented a COA of bounding the NCS-Es and relay/retrans vehicles throughout the route in order to provide route coverage for convoys. Expected range of the EPLRS radio in southern Iraq was over 75 km and in execution varied between 35-100 km.

A constant challenge to maintaining SA was the positioning of NCS-Es and relay/retrans at Convoy Support Centers, which unfortunately were typically near built up and urban areas. This reduced the effective range of the EPLRS system to below 75 km, especially as convoys traversed the relative urban sprawl of Baghdad. Each convoy was tracked north of the Iraqi border until terrain masked the EPLRS signal and each radio went into TRACNET (an isolation of the EPLRS network where only radios in that network can provide SA and messaging services internal to the TRACNET group). Upon entering a NCS-E management area NCS-E operator reassumed control of the radios by "advance without a re-key" to bring them out of TRACNET and back into the existing EPLRS network. This COA was a carefully synchronized operation and required very experienced NCS-E operators to constantly manage the network to ensure stability and prevent total fragmentation.

A significant draw back to this COA was the inability of each NCS-E to be in direct line-of-sight communication with other NCS-Es in the network. Having a direct link between NCS-Es is necessary to efficiently manage the radios, maintain a control net between operators, and establish proper timing/network RSID divisions. A second issue was due to the total distance of the route a NCS-E could not initially be placed at Samarra. Regardless of these limitations the brigade was able to maintain SA and the EPLRS network was reasonably intact as the brigade closed from Baghdad into Samarra (150 km). Once closed, the EPLRS network needed to have several "advances" and re-keys in order to achieve a completely restored network.

Without two of the most experienced and knowledgeable NCS-E operators in the Army executing the network, re-establishing control of all of the EPLRS radios and the subsequent FBCB2 SA would have taken significantly longer than the two days it did.

During operations in Samarra FBCB2 proved to be the most valuable asset to the commander in obtaining and maintaining SA of elements as Strykers conducted operations in the city. The training and TTPs of the brigade to rapidly update the COP and message between platforms enabled commanders to visualize the battlefield and effectively manage forces and synchronize operations.

Because of their remote locations in the noncontiguous battlefield and COE of Iraq, security of key signal nodes was paramount to the command. The requirement to minimize combat power tasked with securing fixed sites and maximizing forces focused on NCF drove NCS-Es and relay/retrans vehicles to be placed in less than optimal locations and collocating with other C2 assets. The focus of the planning staff was to first provide FM coverage and second FBCB2/EPLRS connectivity. The result was an EPLRS network that required constant supervision and control by all operators. Though largely "invisible" to the Soldiers on the ground, the effort required to maintain connectivity was surprising and a constant concern of the BDE S6.

As a component to operations in Samarra the brigade operated with elements of 4th ID. Though 4th ID possessed EPLRS/FBCB2 their NCS-Es operated on different C2 needlines from the brigade. After coordinating with 31C Soldiers from 4th ID the brigade was able to "merge" the two EPLRS networks via a Gateway. This interface immediately proved the immense power of the FBCB2 network, though the networks could not message between themselves the SA that was provided ensured that boundaries, QRF, CFL and other control measures were effectively managed and employed.

Below are described the specific procedures implemented in order to merge 4ID and 3/2 EPLRS networks.

Procedures:

1. FBCB2 needlines are dynamically activated Permanent Virtual Circuits. They are High Data Rate Carrier Sense Multiple Access circuits. Neither source or destination RSID/MILID are entered in the database because they are dynamic and any radio can request activation of the Logical Channel Number assigned to the NL. The LCNs are pre-assigned by the FBCB2 database builders to correspond with the FBCB2 HDD and INC databases therefore cannot be altered. Every brigade that has FBCB2 uses a different LCN for the brigade wide SA NL.
2. LCNs are used by the Radio Set similar to a port on a computer and are only associated with the circuit in that it has been assigned to that circuit in the NL database. It is not necessary for all radios participating on the same PVC to use the same LCN.
3. It is possible for the NCS-E operator to "add HDR unit" (RSID/MILID) with a different LCN into the FBCB2 NL entry.
4. The EPLRS Gateway Radio Set consists of two EPLRS RTs and a conduit cable between the two RTs. To establish a gateway NL, both radios must be assigned the same LCN. The NL can be activated by either the NCS-E or the Gateway RS operator (.A URO message IAW TM)
5. The Gateway RS operator must manually enter the correct host link parameters (-L URO message

IAW TM) for gateway operations.

Required coordination between brigades:

1. Each brigade's EPLRS Planner must know the complete list of used LCNs for the "other" brigade. An LCN should be selected that is not already in use by either brigade and must be the same for both brigades because of item 2 above.

2. The RSID/MILID of the Gateway RS that will be loaded with the "other" brigade's COMSEC will need to be known by the "other" brigade.

In the following example 2nd BCT, 4 ID and 3 BDE, 2 ID will be used. The actual data will not be used and is for explanation purposes only.

3 BDE, 2 ID NCS-E database contains the following:

1. NLID 1801 is brigade-wide SA and is assigned LCN A0

2. LCNs 11, 12, 13 and A0 through BF (hex) are in use.

3. RSID/MILID of Gateway RSs are 197E/1G8WAYA2 and 197F/1G8WAYB2

2 BCT, 4 ID NCS-E database contains the following:

1. NLID 1811 is brigade-wide SA and is assigned LCN D9.

2. LCNs 2A – 2D, 90 – 9F and D0 – EF are in use.

(the two brigade wide SA NLs use different LCNs so a LCN not in use by either brigade must be selected for use by the Gateway RS in order to link the two radios together)

The unused LCN C0 is selected. RSID 197F will be loaded with 4 ID COMSEC. Now LCN C0 can be activated on both the Gateway radios (197E and 197F) creating a PVC between both brigades FBCB2 SA.

3 BDE, 2 ID NCS-E menu selections and database entries:

Edit
Library
Needline entry
Add HDR unit
Type 1801 and hit return
Enter source RSID 197E, source LCN C0, PRI 1 and IDX 001 and hit return.

2 BCT, 4 ID NCS-E menu selections and database entries:

Edit
Library
Needline entry
Add HDR unit
Type 1811 and hit return
Enter source RSID 197F, source LCN C0, PRI 1 and IDX 001 and hit return.

Though EPLRS is an integral part of the FBCB2, the FBCB2 on its own is a true combat multiplier to the Soldier on the ground, while providing leadership a phenomenal view of the battlefield.

At the conclusion of combat operations in Samarra the brigade initiated movement north to Mosul. Leveraging some of the lessons learned from the first major movement, the brigade employed the brigade TAC, NOC-V, SMART-T and an NCS-E at Mosul prior to the follow-on movement of the main body. This ostensibly "book-ended" the convoy route with WAN access and EPLRS/FBCB2 coverage. Additionally this proved a theory that was discovered during JRTC where the EPLRS network was able to be managed and provide SA through the brigade's satellite terminals. Through this link the brigade was able to accurately and reliably track SP and closure of all assets from Samarra to Mosul, a distance of over 459 km, via EPLRS. Once established in Mosul the brigade emplaced relay/retrans and NCS-E teams at two locations on the battle space, one to support operations to the far west and one to support operations to the south.

This array provided complete coverage of the AO with EPLRS line of sight distances in excess of 100 km. The third NCS-E was maintained at the BDE TOC though not actively managing the network, it generated Integrated Key Encryption Key for EPLRS radios as well as acted as tertiary management terminal for network. The distance between the two active NCS-Es was on the outer limits of EPLRS range (over 110 km) and occasionally resulted in fragmentation of the network the SA and messaging of FBCB2 platforms. Once again the demands of force protection and economy of combat forces for security of signal nodes resulted in the NCS-E to the far west have issues maintaining a consistent and reliable control link to the southern NCS-E (a distance of over 110 km). This issue was not overly critical and did not negatively impact any combat operation though it did pose some issues with timeliness of message delivery and receipt.

Though EPLRS is an integral part of the FBCB2, the FBCB2 on its own is a true combat multiplier to the Soldier on the ground, while providing leadership a phenomenal view of the battlefield. In a Contemporary Operating Environment such as Iraq, the main threat is primarily IEDs, small arms fire, and RPGs. Combat operations consist of patrols, apprehending targets and small-scale offensive operations in remote locations. It is this environment where FBCB2 truly demonstrates an overwhelming advantage over traditional voice communications and Blue Force Tracking. The brigade uses FBCB2 to track convoy operations, whereas every convoy must have at least two FBCB2 systems operational, one at the front and rear of the convoy. This provides the battle captain a graphic depiction of convoy SP, progress and arrival as well as a

means to rapidly alert crews to dangers ahead or changes in mission.

By manually posting a red icon on the screen, all elements within the AO are able to associate a threat and collaborate it with voice reporting or "free text" messaging. During targeting operations FBCB2 is used to post the latest graphics, imagery and updated threat situation "on the fly" (the bandwidth of EPLRS enables data transfer and SA update faster than BFT). Frequently during raid operations FBCB2 was used to update a COP, provide immediate Actionable Intelligence obtained from other sources that translated into a second or third operation within minutes of receiving information rather than initiating another planning session or meeting at a rally point. The density of EPLRS/FBCB2 platforms in the brigade enabled multiple targets to be "exploited" simultaneously within minutes of receipt of AI that typically resulted in several additional targets to be detained.

Several lessons learned and TTPs have evolved from employing the largest active network and density of FBCB2 and EPLRS radios in the Army.

Specific to EPLRS:

(1) All relay/retrans or EGRU designated vehicles must QEAM mount EPLRS antennas whenever possible.

(2) As tactically feasible all available FBCB2 SA server designated platforms must be place in system to ensure proper SA and routing.

(3) NCS-Es whenever possible should be employed away from a TOC, the proliferation of EPLRS and other emitters in a SBCT TOC reduces the effectiveness of the management terminals.

(4) Planning staffs must have a complete understanding of the advantages and disadvantages of an EPLRS network and more importantly how to employ an EPLRS network within the constructs of a tactical environment.

(5) Increase the number of management platforms for EPLRS, though EPLRS Network Manager may be the future for SBCTs, it does not provide the power of a NCS-E to manipulate and configure the network. Consider incorporating both ENM and NCS-E in future SBCTs.

Specific to FBCB2:

FBCB2 is a winner and based on having the luxury of both BFT and FBCB2 operating in the brigade the general consensus is EPLRS/FBCB2 is far superior. I would venture to say, if a BFT enabled unit was able to conduct operations in a EPLRS based environment, it would find EPLRS/FBCB2 significantly better at SA, messaging, speed and information assurance. The Army needs to take a close look at the requirement to continue any BFT fielding for future SBCTs. Lessons learned and TTPs:

(1) Though relatively intuitive, FBCB2 requires training; a common "windows"-based platform should replace the windows/UNIX feel of the software. Specifically, messaging should be similar to Outlook as an interface where addresses are quickly called up and identified and a sent/deleted message folder established. Incorporate a "you-have-mail" pop-up on the primary screen vice a FIPR block ID panel.

(2) Icon filters must be improved so platforms can be rapidly found within the database and immediately referenced on the map.

(3) The brigade rarely used the message formats on FBCB2, instead using the faster "free text" message option to send critical information. Scale down the number of message formats to their most basic functions (free text, spot report, MEDEVAC, etc.). Increase the free-text message size limitation from 876 bytes to one that can better accommodate larger messages.

(4) Increase the variety and type of icons in the database to incorporate all branches and specialties, having "infantry" icons only made filtering through them difficult to find a specific type of unit.

(5) Develop a database that is configurable on-the-fly capable of adding unique role names at the unit level rather than requiring a arduous engineering process through the PM and CTSF.

(6) Develop an easily configurable platform priority designation where only certain FBCB2 platforms can post and delete graphics, engineer graphics, etc. (i.e. only an engineer platform can delete a posted minefield on the FBCB2 network, vice any platform being able to change icons and database objects)

(7) Incorporate a "message received" confirmation into the messaging process. In an age of instant email the brigade has found that a "message sent is message received" mentality is prevalent. This has extended to FBCB2, where a message has been sent with the assumption that the addressee received it. Confirmation of receipt should be intuitive and easy to acknowledge.

(8) Develop a "flash" and "priority" message banner on the main **GUI** of the FBCB2 rather than a numerical designation on the FIPR ID panel. Finally,

(9) Improve the Fragmentary Order/OPORD message format to enable more flexibility for developing and reading orders on the FBCB2.

Two items of critical note is the implementation of a FBCB2 "digital-stand-to" and the flow of replacement FBCB2 parts in the brigade. Early in the deployment the brigade expanded a SOP of digital connectivity validation and confirmation to encompass FBCB2 network connectivity on a weekly basis. The purpose of this stand to was to ensure that all available FBCB2s in the network were capable of obtaining messaging and a COP.

Non-mission capable systems (i.e. down for parts, trouble tickets, prime mover issues, or other) were exempt from this stand to. Typically the stand to was executed early in the morning and in some cases was synchronized with the brigade-wide EPLRS OTAR. This was a command

directed event, coordinated at the S6 level, orchestrated by the BDE S6/NOSC and typically resulted in over 85 percent of the brigade FMC FBCB2s being consistently in net (550-595 systems).

During CERTEX I and II, the brigade experienced significant FBCB2 parts availability issues. This was traced to problems with the turn-in and evacuation of FBCB2 screens, CPUs, keyboards, PLGRs and on-hand quantities of cables and connectors. CTSF-Northwest (STRYKER) was clearly the most capable organization to assist the brigade in mitigating the parts shortage and equipment evacuation. With a robust receiving, packing, and evacuation team (positioned throughout the theater and in the states) and procedures as well as the technical expertise of PM FBCB2 contractors, CTSF-STRYKER was ideally suited to assume the mission of improving FBCB2 parts flow and maintenance tracking. Within a month of deploying CTSF-STRYKER assumed control of "pushing" FBCB2 parts, coordinating evacuation of components, and tracking all asset availability. FBCB2 ASL was transferred to CTSF-STRYKER and a team was placed near the Electronics Maintenance Shop for receipt of equipment at the BSB.

Operational Readiness of FBCB2 improved significantly once this procedure was in place. Still the availability of FBCB2 parts needs to improve and the production limitation of hard drives, screens, and keyboards should be lifted to address the proliferation of FBCB2 (and BFT) systems in the Army.

BFT

Prior to deployment the brigade was fielded 13 Blue Force Tracker systems. These were installed on each battalion commander's Stryker CV and one for each TOC. Additionally the aviation squadron, Civil Affairs and PSYOP units were enabled with 46 BFT systems. The CA and PSYOP units were provided a hybrid BFT/FBCB2 that could switch between BFT and EPLRS/FBCB2 once the J3 cable and hard drive was swapped.

Although BFT has been very popular with "analog" units in providing SA, the brigade has not found BFT as beneficial as FBCB2 for SA or executing combat operations. Perhaps due to the density of EPLRS/FBCB2 in the brigade and TTPs established by the Soldiers to integrate and use the system as a means for communications (messaging) and SA on the move; BFT has gone largely unused. This is not meant to imply that there is no need for BFT. On numerous occasions BFT was used to determine positioning of "analog" units within an area of interest or during movement through adjacent battle spaces.

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Finally, there have been numerous COAs presented on merging the BFT and EPLRS/FBCB2 networks at the lower T/I level. Concurrently there are numerous hurdles that must be overcome before such a network can exist, mainly the merging of an unclassified (BFT) network with a classified FBCB2 network. Though technically it's possible, the greatest draw back is the lack of messaging, which in the SBCT, is one of the primary methods for communicating with dispersed platforms.

Lastly, a new L-Band enhanced EPLRS/FBCB2 COA has been presented to the brigade though the same questions remain in regard to security, messaging and distribution of these radios in an EPLRS network. Careful consideration must be taken when attempting to integrate "new" systems into the SBCT architecture vice injecting them into an "analog" unit. The SBCT do not easily accept changes or additions to routing, IP addressing and databases of the existing network.

Relay/Retransmision Vehicle

As previously mentioned the relay/retransmission vehicle, with the addition of a third stack of FM radios, was one of the significant enhancements to the brigade's network. So-called relay/retrans because of the density of data radios in the brigade operating under the premise of relaying rather than retransmitting. The additional FM stack, in and of itself, enabled the R/R mission to require less force protection, provide an "economy of force" for retrans Soldiers, and increase the C2 capability of the brigade. As originally fielded there are 15 R/R vehicles, two per IN BN, three per CAV/FA BN and three in the Signal company. Each vehicle has FBCB2/EPLRS, 3 x AN/VRC-92F SINCGARS, NTDR and deep cycle batteries, AC/DC converters to convert the power generated by the towed 3KW generator. Finally each team is comprised of either two or three Soldiers as well as 6 COM-201 FM antennas.

The R/R vehicle serves two critical network functions. One R/R vehicle in each battalion is designated an EPLRS/FBCB2 SA server. The SA server enables FBCB2 messages to be routed to their destinations and ensures the accurate positioning of icons on the screen. This designation allows for an EPLRS "hop" to be "refreshed" if the number of EPLRS "hops" exceeds the limit of the radio system (typically four hops, where a hop is an EPLRS to EPLRS LOS link). This ensures that the EPLRS network can efficiently route needlines.

Without this SA server functionality of the R/R vehicle the FBCB2 network could fragment or be lost all together. Each RTNS1 FBCB2 "role name" is automatically designated a SA server, though if not available or NMC, another vehicle

can "re-role" their FBCB2 to assume SA server functionality. A second network function of the vehicle (specifically the EPLRS) is the identification its radio as a Grid Reference Unit. An NCS-E can manually specify EPLRS radios as GRUs; the brigade's TTP is to always designate relay/retransmission vehicles as GRUs. By establishing GRUs across the battle space the EPLRS network can accurately determine position of any radio through triangulation of the reference points. A third network relay function is the NTDR, though as a matter of SOP the radio is powered up but as previously mentioned the brigade has not employed the NTDR substantially, thus this capability has gone largely unused in the R/R vehicle.

The value of the third stack of FM radios became immediately apparent when brigade conducted operations north of the Iraqi border. Positioned at key convoy support centers the brigade was able to retransmit BDE CMD, BDE convoy and a QRF net throughout the route with a solitary vehicle. This negated an increase of life support, force protection, and logistical requirements of an additional vehicle. The capability of maintaining a command, convoy and quick reactionary force net without having to deploy additional assets forward significantly reduced the forward footprint at four different CSC. Essentially the brigade accomplished the retrans mission using four vehicles versus eight, the benefits were clear.

Once combat operations in Samarra commenced the brigade employed nine R/R vehicles in support of operations throughout the sector. Seven vehicles were deployed in the immediate AO (45 x 50 km) and two additional systems were tasked in support of a detached infantry battalion 40 km south and west of the brigade that needed EPLRS and voice connectivity. Two of the nine vehicles were brigade (Signal company) R/R assets. The density of these assets was required for voice and digital connectivity down to squads and platoons

COM201B FM antenna is shown in the foreground and IKSS satellite dish in the background.

operating in the urban terrain of downtown Samarra.

As the brigade transitioned from Samarra to Mosul a single brigade R/R vehicle was emplaced mid-route to provide voice retransmission for GAC operations (two brigade and one battalion net). Once the brigade was established in Mosul a second R/R site was occupied to the west for CNR and EPLRS connectivity. The final brigade CNR network was one R/R site 75 km west of Mosul and a second 45 km south; NCS-Es were co-located with each R/R vehicle. Each brigade R/R team retrans'ed BDE CMD, BDE O&I, and BDE Fires; as the AO developed several battalions emplaced their R/R vehicles with the brigade assets in order to consolidate force protection and logistics support. At one site three R/R vehicles are executing operations that would typically require five "standard" dual stack retrans vehicles.

In order for each relay/retrans vehicle to have adequate power to operate the radio systems (FBCB2/EPLRS, 3rd 92 series radio, NTDR) each vehicle is outfitted with dual deep cycle marine type batteries as well as a 3KW generator for stand alone power generation interfaced with a DC charging unit. Using this system the relay/retrans is able to charge from the 3KW generator or directly from the vehicle's alternator. Of note was a potential issue with failure of the DC chargers in high heat environments. The charger was moved farther off of the mounting plate to allow for increased airflow. Another potential issue is the "under" loading of the 3KW system. Commercial, local and "stateside" generators were integrated with power adapters to facilitate load and remoting of radio systems.

Each relay/retrans vehicle was provided 6 COM 201 FM antennas, these antennas used in conjunction with the mast sections of an OE-254 or Quick Erect Antenna Mast significantly improved set-up and tear down time to under 30 minutes for full three-net operation. The COM 201 is a significant improvement to the existing OE-254 antenna. At less than 10 lbs the antenna is extremely lightweight and can be configured for free-standing (ground), mast-mounted or aerial hanging operations. The brigade possesses over 200 COM 201s and has outfitted every CP with these antennas with all elements reporting significant improvements on FM range and clarity. Serious consideration must be made by the signal community to phase the COM 201 antenna into the inventory as the replacement to the OE-254. Additionally the brigade tested another Atlantic Microwave product, a "Stacked" COM 228, capable of two FM nets from the same antenna mast.

Predominantly used at R/R sites, these systems enabled faster set-up and tear down time as well as reduced the physical footprint of the retrans site.

The R/R M1113 Highly Mobile Multi-Wheeled Vehicle tows a High Mobility Trailer carrying the 3KW generator and equipment. Experience has shown that the HMMWV is underpowered during cross-country and hill climbing operations when towing the trailer. The best HMMWV platform for this configuration would be the M1114, which

provides greater lower end torque and horsepower. This configuration would ensure that R/R teams could tow the trailer up steep hilltops and through rugged terrain without significant power loss or requiring the trailer to be unhitched.

Follow-on SBCTs R/R vehicles should be replaced with Stryker Command Variants. The CV is the ideal platform because it provides more than adequate power, a redundant electrical system and external antenna ports for a retrans operation. The vehicle would solve the power problems, space constraints, eliminate trailer requirements and would embed a force protection capability that currently must be accomplished by infantry.

Overall the relay/retransmission vehicle in concept has proven its worth as a force multiplier for the brigade. The Stryker brigade retrans should be identified as a platform unique to transformation and acknowledged as a system of systems for follow on digitized units. Without it facilitating the EPLRS and NTDR network, providing retransmission of three FM nets and enhancing command and control, the brigade would be forced to employ a greater density of signal assets to accomplish same mission.

CNR (AN/PRC-148, AN/PRC-150, AN/PSC-5, AN/PRC-117F)

Combat Net Radio is the lifeblood of any fighting force and the SBCT is no exception with over 1200 SINCGARs, 450 AN/PRC-148 MBITR, 78 AN/PRC-150, and 26 PSC-5c radios the brigade is arguably very well resourced. Throughout the deployment the brigade exercised every communications system available in order to accomplish the mission. Recommendations for improvements and additions are noted below.

AN/PRC-148 Multi-Band Inter-Intra Team Radio was fielded to the brigade as an enhancement to platoon, squad, and team operations. Originally fielded with 450 MBITRs the brigade quickly determined the flexibility and capability of the radio as a full spectrum communications device. Though the initial impression is the brigade has more than enough MBITRs to accomplish any mission; the non-contiguous and Civil Military Operation focus identified a shortfall in the distribution of the radios.

Each infantry battalion and the cavalry squadron were fielded approximately 95 radios each with the remaining balance being distributed among the BDE HHC, engineer and anti-tank companies. But because of the nature of operations, the field artillery and brigade support battalions conducted urban operations typically reserved for infantry units. In fact the FA BN was provided a battle space and mission virtually identical to the infantry and cavalry units organic to the brigade. With the addition of an engineer battalion and air cavalry squadron, it was obvious the brigade required additional MBITR assets. The brigade was approved by CJTF-7 to acquire an additional 250 radios for distribution to the engineer, air cavalry and field artillery battalions though production demands may preclude the brigade obtaining the radios prior to redeployment.

Future allocations of PRC-148 radios for SBCTs should be increased from 450 to 600 in order to facilitate the full spectrum capability of all combat units and attachments in a Stryker brigade.

Seventy-eight AN/PRC-150c Advanced High Frequency/Very High Frequency Tactical Radio Systems were fielded to the brigade. The distribution of these HF radios was predominantly in the cavalry, MICO and in each CV and TOC/CPs. As a long-haul voice asset the brigade has used it with varying degrees of success. In Automatic Link Establishment mode the radio was extremely successful communicating in relatively small networks (battalion and below) though ALE was not practical as a command net for brigade wide communications.

When used as a digital transmission medium the HF radio was very reliable. By combining the HF radio with TacCHAT units were able to send data via serial mode at 9600 baud. Though not fast, the HF radio in this configuration provided data links to company and platoon out sites there were not within a typical MSE/IKSS SIPR footprint. The limiting factor with the HF radios was the availability of usable of frequencies for standard day/night operation. Though daytime frequencies were plentiful evening frequencies were a premium and unless on ALE mode, largely unusable. The brigade must obtain a reliable HF/VHF propagation program for HF frequencies on a global terrain database.

The traditional workhorse for the Army, the AN/PSC-5 Spitfire, continues to be one of the most beneficial long haul voice and data assets for the brigade. With 26 Spitfires assigned to the brigade (a majority assigned to the cavalry and MICO) their utility was foremost in maintaining tactical voice communications with outlying units. Though used in limited form for data transmission the Spitfire was predominately used for voice traffic between BNs and the BDE in addition to communicating to higher. The most glaring issue was the lack of useable wide-band 25 KHz channels theater wide. Though the original SA and Information Exchange Requirements for Spitfire depicted channels for command, intelligence and fires, the brigade was only able to retain two 5 KHz (one ANDVT, one DAMA) channels for operations. Both channels were virtually unusable for clear-voice traffic and one channel did not possess a take off angle that facilitated using the SATCOM On-the-Move system installed on selected CVs (above 21 degrees). Neither channel was used for data transfer. An additional problem, though directly related to the radio, was the distribution of the radios in the brigade. Once again as with the PRC-148 the BSB, FA, engineer and attached units were not fielded a Spitfire radio. The brigade cross leveled PSC-5s internally to ensure all units possessed the capability to communicate via S/C TACSAT, though the availability of antennas and radios necessitated providing

two units PRC-148s (for operation in SATCOM mode) and low gain antennas acquired from depot stockage. Future SBCT must be fielded this capability throughout the brigade in all battalions and separate companies.

The AN/PRC-117F Multi-Band Radio (Falcon II) was not fielded to the brigade but throughout deployment numerous agencies (OGA, Air Force, SF) elements possessed the radio. The brigade immediately recognized this radios flexibility and reliability in integrating with SATCOM, SINCGARS and HF (30-512 MHz) frequencies. The brigade requires such a radio for its multi-band capabilities and multi-use as a single communications platform for CNR operations.

Much like the PRC-148, the Falcon II should be developed as the communications platform of choice to replace the PSC-5 and HF platforms in follow on SBCTs and transformation efforts. An added benefit of the PRC-117F radio is the availability of the High Performance Waveform which provides an Microsoft Outlook based email waveform enabling files up to 3 Mbs to be easily transferred between another 117F. Had the brigade possessed such a radio the numerous company level FOBs in the AO could have possessed the ability to send and receive large data, imagery and presentation-based files. In an effort to address this requirement the brigade is pursuing the procurement of PRC-117F radios in addition to facilitating, in the short term, companies with a ViaSat PCMCIA data controller card for use with the PRC-150 radio and a laptop.

Other CNR enablers

Throughout the course of deployment the brigade is constantly searching out new and improved systems to enhance combat operations and signal communications. Below are some of the signal initiatives we have researched and implemented.

Television Equipment Associates provides tactical headsets, microphones and lower cords sets. Their equipment is extremely durable and an unsurpassed improvement of communications systems associated with CVC and MICH as well as dismounted radio systems. Recommended selections are Lash II throat mics, dual cord with integrated PTT for two radios, INVISO bone mics and Lite II headsets (noise cancellation and ambient reduction).

ABP PP 6224 Power converters are standalone power converters that facilitates dismounting of multiple connections. The brigade remotes complete FM (VAA), GPS, FBCB2, HF, PSC-5 and other 12 or 24-volt mil standard systems from shelters into hardstand environments.

Power spikes are minimized and equipment is protected by soft startup/shutdown characteristics. These power converters are the systems of choice for all C4ISR equipment dismounted and remoted in the brigade.

The INMARSAT Mini NERA sat-phone is a small-lightweight phone the brigade is using for COMSEC up/download to battalions through a STE. By successfully passing COMSEC via STE and INMARSAT soldiers and equipment are not placed at risk by traveling to a central location for COMSEC issue.

ABCS hardware/software

The Army Battle Command System in the brigade is comprised of Maneuver Control System, All Source Analysis System, Advanced Field Artillery Tactical Data System, Air and Missile Defense Workstation, Combat Service Support Control System and Digital Topographic Support System. "Light" versions of MCS and ASAS running a Windows 2000 platform are distributed as 36 MCS-L and 13 ASAS-L down to the battalion level and in some cases separate companies. Over all the "light" versions of MCS and ASAS have been the platforms of choice for their flexibility, size, common OS and capacity for peripheral attachment. The brigade deployed with the following software baseline under ABCS Version 6.3.4:

AFATDS: 6.3.1 8-12K_SP4
AMDWS: 2.0.6.3
ASAS-RWS: 6.3.2.5.1_P5
ASAS-L: 6.3.2.4_P10.5.4
DTSS: 8.0/8.0.5.0
FBCB2: 3.5.4
IMETS: 6.2.3 Bld 11_P4
Map Server: 1.2.0.0
MCS: 6.3.3.2_P2
CS-L: 6.3.3.2_P6
TIMS: 2.5.2.0
MDR: Exch/SQL/Win 2000

Though the brigade was guaranteed that additional software fielding would be suspended once in country, the proliferation of MCS-L, ASAS-L and AFATDS in theater forced upgrades to two specific platforms. AFATDS was upgraded to 6.3.2 under 6.3.4 to facilitate inter theater communications with AFATDS systems in the brigade. The second was an upgrade to ASAS-L from P10.5.4 to P10.5.5 as a means to share a common server database throughout theater.

This upgrade, though guaranteed to work by the PM did not meet expectations and is currently being re-engineered for theater-wide use. The failure of this patch has not precluded the ASAS-L from accomplishing its function at the brigade level. Finally an upgrade of FBCB2 from 3.5.4 to 3.5.5 was initiated by theater though the brigade declined this upgrade primarily due to a lack of value added of the patch and the premise of the software was to improve theater visibility of FBCB2 rather than improve the brigade internal. Upgrading FBCB2 software, while easy to implement for the relatively few platforms in theater synchronized with rotating units and Stay Behind Equipment, upgrading over 700 platforms in the brigade was not operationally feasible.

The utility of ABCS software has been minimal at best. With the proliferation of email and file servers in the brigade, the messaging and collaboration suites in ABCS have gone largely unused. In fact the primary function of much of the ABCS systems is to leverage the

TOC server functionality and maintain SA. Most of the ABCS suites and hardware are being used as standard 'SECRET' laptop computers for access to email and SIPRNET. The brigade never used CSSCS, now defunct as a system. In general ABCS software provides the user an extreme amount of unnecessary functionality. As with FBCB2, Unit Task Reorganization is so complicated, it has never been attempted as a synchronized action. ABCS messaging is too inflexible in its inability to communicate with external unit messaging protocols.

The brigade has embraced email as the messaging of choice over anything inherent in ABCS. Though initially touted as a collaborative software package, and after a significant amount of training and "fanfare" the collaborative nature of ABCS has never been realized. Instead the brigade has found MercChat and Microsoft Net meeting as far better alternatives for collaboration and file sharing. ABCS has no inherent Information Assurance functionality or plan and password control is non-existent.

Some systems use the generic administrator account with no password; others do not allow users to configure passwords (this is a larger issue than just ABCS, it encompasses FBCB2 and BFT as well). Security patches and IAVA updates cannot be done in a timely manner due to PM directives for what and when they can be loaded on their systems. As a result a majority of these systems remain vulnerable in the interim.

The brigade S6 has attempted for years to rectify this with the PM, and has resorted to updating the Antivirus signatures. While there is a list of IA software associated with ABCS, none of the software has been configured to function, nor is there an ABCS master IA resource server to activate remote perimeter protection.

Though there are numerous issues with ABCS systems, certain individual systems can be highlighted.

AFATDS continues to be a success for the brigade in providing situational awareness as well as in indirect, counter-mortar and radar acquisition modes/roles. Interfacing with AN/TPQ-36 and 37 radars the AFATDS provided a power tool to the commander to accurately track frequent mortar attacks in the city of Mosul. During operations in Samarra the brigade used the rapid acquisition interleaved with AFATDS fire mission execution and clearance of fires to rapidly conduct indirect fire missions as well as Harassment & Interdiction fires.

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ASAS as a system has never had the intuitive red picture and spot report corroboration that was touted throughout the brigade's training and deployment. Frequently assumed to be a training issue, deployment has shown that the software is the primary problem.

There is no true "active" database from which deconfliction of spot reports, enemy link diagrams and nested threat matrixes can be accessed. ASAS-L has primarily been used as tool for analyzing information, not collaboration, facilitating a decision or recommendation to the commander.

DTSS and the map server has been a significant enhancement to the brigade. It is probably the most used ABCS component to providing usable products and information to ground forces. Throughout the deployment DTSS has provided imagery, map data and city sector information for urban operations. Frequently the imagery accessed and modified by DTSS has been loaded on a MDL and provided to unit FBCB2s with specific responsibilities within city/town locales. While the brigade received attachments and unique missions the DTSS team provided maps, route/convoy information and graphical building numbering schemes that enhanced logistics, communications and operational planning and execution.

One issue with the DTSS is its designation as a "non-standard" TOC platform. This designation has created some issues with maintenance and service. Because the DTSS platform and components are associated with MANTECH Corp, the contractors assigned to the brigade were frequently unable to work on the shelter or its systems. The DTSS must be re-aligned under a common service contract in order to better facilitate software/hardware sustainment and maintenance (PM TOCS/Platforms).

MCS, MCS-Heavy, originally designed as both a server and user workstation, is moving more and more into a server only role, with the MCS-Light picking up the "workstation" portion of the functions. The MCS has a critical role as server, and so it was based on the Solarix (Unix) operating system.

However, its ease of use is greatly surpassed by that of the MCS Light, as soldiers are often already familiar with MS Windows ™and MS Office ™ At the BDE Main, a second workstation is used as a cross check on live feed and an additional display, and in past has been used as

a repository for the data transfer of overlays. Some units still use the MCS WS for messaging, since it's a central system that is almost always up. In rare cases the Send Plan capability is still used. A plan can be sent directly to another MCS Heavy or ABCS Unix based system with notification, such as AFATDS. Again, only in rare cases, as the preferred SOP is to place MCS-Light .xml files on the (non-ABCS) BDE web page for download.

As mentioned earlier, MCS-Light is used in more staff sections across the brigade than in the past, and it is valued for its flexibility. Brigade purchased extra laptops to accommodate the additional requests and attachment of "non-digital" units. It is used for most all workstation tasks: maps and overlays, messaging, live feed, presentations, orders and more. It has been added to the MICO, BDE S-4, S2 sections, and to units augmenting the BDE such as Civil Affairs, ALO and the Air CAV liaison.

Due to the compatibility with C2PC (though the brigade doesn't maintain C2PC organically) and other map/graphical software extensions several sections have added software to the "Light" platform, for example Falcon View. The addition of software on some of these systems can cause unpredictable software conflicts, though the significant ones have been resolved. Note that part of the reason for the addition is that the two systems are not able to pass overlay data readily, which has caused extra work for battle captains and planners. There are also interoperability issues with DTSS overlays, and to a lesser extent with C2PC overlays.

MCS Light, while providing an easier interface to plan creation and upload, is not being used to post plans to the MCS web page as a single compressed file. Documents and overlays are passed as individual files, posted to the BDE web page.

Prior to deployment the brigade was fielded a Message Data Replicator. The MDR was provided as a means to exchange friendly unit data between ABCS and GCCS-A/J. Its usage has been limited, in part due to its newness and late date of introduction. The bottom up brigade internal feed has been more important to the higher headquarters than the top down theater feed to the brigade. While theater level is interested in the whole picture, the brigade needs to focus on individual COE/MOOTW operations, which are often isolated from other units. Only in one case where visibility of BFT (only) equipped units has been required has the top down feed been requested.

Overall the MDR has performed well and was exactly what the brigade required to interface with CJTF-7 vice the more complex and "top heavy" Digital Bridge that was initially proposed as the element designed to link SBCT and an "analog" higher headquarters.

Tactical Internet Manager, aka ISYSCON (V)4; was fielded to the brigade as the network management tool for battalion and brigade signalers to maintain and manage the tactical network. To date the functionality and usability of TIMs has been essentially useless to Signal officers and Soldiers. The original concept was to provide a single management platform for monitoring, tracking, configuring and troubleshooting the tactical internet. Currently, TIMs is only being used as a SA platform for signal sections, not as a management platform. As far back as April 2003 the brigade identified the shortfalls of TIMs to project managers with recommendations to improve upon it.

Recommendations encompassed:

(1) Improving the planning function on TIMs to include improved LOS profiling, map overlays,

(2) incorporate existing radio systems in the brigade to the planning tools,

(3) develop easily configurable router scripts,

(4) include a network mapping program that is intuitive and comprehensive that does not require a significant amount of training to master (What's Up Gold, though good, is not ideal for management),

(5) the Unit Task Organization and Unit Task Reorganization function is difficult to execute and configure and never has been used. To date none of these recommendation have ever been accepted or implemented. As a direct result, virtually no one in the brigade uses TIMs, choosing to use other commercially available network management systems. It is important to note that the brigade has tried to integrate TIMs and incorporate it as recommended by the developers; but time and time again the brigade has found it lacks functionality and flexibility.

The brigade network is inflexible and static enough without a management terminal that perpetuates it. TIMs is viewed as a system that was forced upon the brigade as a management enabler that had to be used in its current form. Network managers in the brigade feel that TIMs need to be completely redesigned or discarded as a program. Transformation and the migration to COTs network solutions should be managed by an industry accepted management solution rather than a GOTs developed "stovepipe" terminal.

Finally, ABCS and the software suite should be reassessed for its utility. It must be understood that ABCS (or a like system) needs to address the needs of the commander and not be enabled with functions and capabilities that are "nice to have" and largely not necessary. Anything that does not immediately improve the ability for the commander to make decisions or execute battle command faster or with additional clarity is not necessary (FBCB2 is a prime example of providing value added). Software that requires in-depth training or configuration for an added benefit usually results in the software not being used to the fullest extent. The general consensus is if management systems work in the civilian sector and is widely accepted then it is probably adequate for military use (i.e. Windows, Outlook, etc.). The military community should not

continually attempt to re-invent the "wheel" in regards to digital systems.

Network General

SBCT networks need to be completely stand-alone. Each SBCT needs its own permanently assigned Autonomous System Number and IP addressing, not associated with any other organization. This would have greatly enhanced the brigade's ability to join the network in theater. The theater routing protocol (EIGRP) was not inherent to the brigade's internal OSPF-based protocol. Because of limitations of the lower T/I routing equipment and INCs (which requires smaller routing tables and updates) the brigade was forced to quickly, without testing, come up with filters and access-lists to limit the amount of routing updates allowed to reach the lower T/I. Initially upon deployment the theater was operating EIGRP protocol for all routers. The brigade built filters and ACLs to accommodate the theater network. Problems occurred when the theater changed routing protocol in conjunction with a change of theater signal assets. When this change occurred the SBCT network became a part of the large theater (WAN) OSPF Area '0' which resulted in a loss of lower T/I feeds to battalion TOCs. The primary cause was the limitations of the Internet Network Control cards to process the entire theater's IP routing tables. This configuration did not allow filtering due to limitations of OSPF. The significant lesson learned is that all SBCT external network connections should be via Border Gateway Protocol. Had this been the case, changes in the theater network would not have adversely effected the brigade's routing. An added benefit to incorporating BGP gateways is network managers would only require proficiency on one internal and one external routing protocol.

Additionally, STEP site connections also require BGP, which would allow the brigade to quickly connect to the DISA networks in a less mature theater.

The SBCT needs a Microsoft Exchange Server, associated domain controllers and web server to effectively communicate with Non-ABCS units. NAV server, SUS server for SIPR and NIPR could alleviate the workload from 74Bs and Signal officers at battalion level.

Given theater load and state-side problems with servers Army Knowledge Online and AKO-S proved reliable only when network conditions were perfect. Local servers would limit inter-theater traffic, as well as allowing the unit to effect IAVA and anti-virus updates in an efficient manner. SIPR email traffic was over 75 percent from brigade to brigade. Using AKO-S email adds what should be, internal traffic to already congested inter-theater communications links.

Each SBCT needs a permanently registered domain on SIPR, for quick connection anywhere in the world. The DNS servers and mail servers addresses need to be registered prior to deployment. The current structure of brigades falling under division and corps domains are not realistic and in many cases (bde3.id2.c1.army.smil.mil) could result in DNS and exchange server addressing changes occurring to frequently to be practical. Division and corps are not likely to deploy with SBCTs. A separate unit that falls directly underneath a different higher command can register as a subordinate of that organization. However, as in our case, changing higher commands multiple times leaves the network admin without a good solution. In fact the normal naming of our unit under the control of 4ID would be bde3.id4.c3.army.smil.mil. The issue there is 4ID already has a 3rd Brigade. Not to mention the fact III Corps was not deployed. The brigade then fell under the control of 101st ABN Div and MND North within months. This would have forced the brigade to change domain names (as well as all associated systems) four times from deployment to the current date. Another possible option was to register directly under CJTF-7. Realizing that c5.army.smil.mil would be replaced with the change over to III Corps, the solution from the brigade, was to register the domain sbct1.army.smil.mil directly. This solution disregards the hierarchical design of DNS, but provided the most logical solution.

Procedures:

Contractors/Support

CTSF-STRYKER deployed a 31-person team (Team Blue) in support of 3/2 SBCT's deployment to Iraq and continues that support as it conducts combat and CMO operations in its AOR. CTSF-STRYKER has literally been a part of the brigade's training, sustainment and maintenance of its C4I systems through numerous local training events, CERTEX I and II at NTC and JRTC, culminating with deployment to Iraq. The composition of CTSF-STRYKER personnel encompass the full range of equipment in the brigade and representation from a majority of project managers; not just C4I equipment. Team Blue deployed with the brigade and was immediately integrated as a component of the Arrowhead Team. The contractors worked, lived, conducted convoys and battlefield circulation throughout the brigade's AO from Udari to Samarra and eventually in Mosul. Without the support of the CTSF-STRYKER team the brigade's systems would have some significant logistical challenges (evacuation of systems) as well as engineering challenges with attached units. Though the perceived size of the C4I contractor support may seem large, they are in fact a huge combat multiplier for the brigade. Team Blue deployed as a completely self-supportive entity with multiple vehicles, hard drive replicators, tentage, power generation and all classes of supply and repair save for POL. CTSF-STRYKER possesses a duplicate set of communications to mirror the brigades automation systems as well a internet reach assets.

CTSF-STRYKER operates from a brigade help desk that is manned by Brigade S6 personnel and 74Bs from the signal company. Trouble

tickets called in or emailed, logged from battalions by the help desk and triaged by the Soldiers and CTSF personnel. If the problem cannot be rectified on the phone the contractors coordinate with the S6 and S3 to move with a convoy to resolve the problem at the battalion. Travel is accomplished in a fleet of up-armored HMMWVs maintained by the contractors, Strykers or in extreme cases via helicopter.

Upon closing upon Mosul the CTSF-STRYKER team consolidated from 31 to 21 contractors. This was in response to the reduced reliance by the brigade on the contractors in addition to a steady decline of trouble tickets throughout the deployment. The revised composition of the team included two field engineers, two PM TOC personnel, two FBCB2 engineers, PM TRCS, CECOM, PM Platforms, AFATDS, ASAS and CSSCS engineers; these personnel were split between the brigade TOC and the BSB. This established a split base operation where help desk operations were executed from the brigade TOC and logistics and part evacuation was accomplished at the logistics hub in Mosul.

Early in the pre-deployment of the brigade Team Blue was directed to support C4ISR ASL for the brigade ant thus does all the shipping, packing and repair for those items. They are triaged by skilled FSRs and use a GD repairman with parts pallet positioned at the BSB to materially aid this process. This support falls in line with a small logistic footprint forward concept of the brigade whereas CTSF possess a large number of support links (material and software) throughout the AO as well as CTSF-Fort Hood in the United States. The CTSF-STRYKER team provides greater logistic C4ISR support structure that is solely focused on the brigade as well as the expertise of engineers and technicians. More than 1,500 trouble tickets were opened and successfully closed in Udari prior to moving into Iraq and the total number in Iraq more than six months was 600. The daily averages of open trouble tickets in the brigade typically are under 20 and are almost exclusively open because of parts availability.

As transformation progresses and Soldiers begin to receive digital training from AIT throughout their careers the reliance on support from contractors will diminish (much like MSE), until then, support from C4I CTSF-STRYKER will continue to be a reality. Team Blue's support to the brigade has been phenomenal and a significant combat multiplier during the initial phases of deployment. Even today contractor support has streamlined at all echelons of triage, troubleshooting, evacuation, receipt and reach logistical support. The contractor support concept as devised by CTSF-STRYKER is a clear model for all other SBCTs in training or deployment.

COMSEC

Though the brigade is arguably the best trained and resourced combat force in the history of the Army, COMSEC operations in deployment was not adequately addressed in any train up to deployment. For garrison operations there was only one Soldier (74C40) assigned to run the COMSEC account. The SBC6T COMSEC account is responsible for more than 800 lines of COMSEC key ranging from FOUO to Top Secret. Accounts of this size normally have one each: Warrant Officer, one each: Skill Level 4 NCO, and two each Skill Level 10 Soldiers assigned full time. There were several Soldiers identified on paper as being alternate COMSEC custodians but they were otherwise performing their primary duties based off the MTOE. Mathematically, the bodies were simply not available to effectively operate/deploy the account. Several DART submissions addressed this personnel shortfall though to date the MTOE has yet to be adjusted to reflect the enormity of COMSEC responsibilities for one Soldier.

The deployability of the LCMS based account was also another issue that raised concerns. Lessons learned from previously deployed units proved that the LCMS system did not perform properly in a tactical environment. Consequently, the decision was made not to deploy the LCMS. This decision resulted in the requirement to leave the only fully trained COMSEC custodian (74C40) at Fort Lewis with the actual account. A plan was devised to conduct a split-based operation with alternate COMSEC custodians executing a select portion of the deployed account (SMART-T with one alternate, CNR with another, etc.).

Each alternate would manage a specific set of keys. The plan was to deploy the brigade with an adequate supply of key material until COMSEC support could be established in theater. All future key, unique to the brigade would be DCS'd or electronically transferred from the Fort Lewis account to the forward based account.

Upon arrival into theater, it quickly became evident that the multiple alternate custodian concept was not going to work. Different methodologies and a lack of deployed COMSEC procedures made the operation and accountability of the forward based account a management challenge for all concerned. There was not a central figurehead on the ground that was maintaining centralized control of COMSEC key loading, issuing, ordering or destruction.

Within two weeks of deployment a collective decision was made to appoint a sole individual as the alternate COMSEC custodian. The management and operation of the account would be the responsibility of that sole individual. Unfortunately the responsibility of COMSEC custodian was passed to the BDE S6 251A (CW2) and was a net loss to the brigade's information operations but a gain for the brigade COMSEC operations. The operation of the account improved significantly once the change was implemented.

A subsequent challenge that arose was the distribution of key material to the battalions within the SBCT. The AOR for the SBCT is spread over distances that require

convoy operations to get to and from the BDE TOC (where the COMSEC Vault is located). A TTP was established which would require the local elements to convoy to the BDE TOC for COMSEC issue. This was followed by establishing set dates for COMSEC issue in order to provide the local elements ample time to coordinate and assemble their convoys. An alternate method for issuing key material was the process of electronically transferring the key via STU-III or STE. Thus far, the code has not been broken in order to successfully transfer key material through the existing network structure within the SBCT. The brigade is working to purchase nine each INMARSAT phones in order to by-bass the existing network architecture and transfer the data directly from STE to STE via INMARSAT. This method has been very successful for electronically transferring key material from the rear-based account to the forward-based account in theater; recommend that all SBCTs be issued INMARSAT phones down to the battalion level for issuing COMSEC during deployment.

The SBCT COMSEC account has been self-sustaining with little or no assistance from external accounts or higher headquarters. The majority of the required KEYMAT has been either DCS'd, hand-carried, or otherwise electronically transferred from the rear-based account. Prior to assuming occupation of FOB Freedom (Mosul) from the 101st Airborne Division, it was understood that MND-N would be the higher headquarters for the SBCT. MND-N arrived without a COMSEC account, COMSEC custodian or Frequency Manager. The responsibility for providing key for all units within MND-N AOR, to include MND-N Headquarters as well, fell on the shoulders of the brigade. The successful operation of the COMSEC account has been maintained but if the unit base continues to grow as trends are indicating, it is imperative that MND-N establish an account in order to strain on the SBCT.

It is recommended that all future SBCTs have a higher headquarters identified prior to deployment and that proper coordination takes place to identify shortcomings prior to execution.

Overall, the operation of the COMSEC account continues to evolve and improve as lessons are learned. Considering that this is the first time that the SBCT has deployed its COMSEC account on a real-world or training mission the execution of COMSEC operations has been very successful.

Conclusion

The communications and network architecture evolves as the brigade continues to conduct combat operations in Iraq. Attachments, detachments and changes in mission sets drive the continuous assessment of the communications network. Much like any other signal organization the primary signal mission remains the same "Support combatant commander's scheme of maneuver and intent."

Though the brigade has been immensely successful in employing and sustaining a digital network it has not been easy. Vigilance is a essential in the Network Operations Security Center to ensure that the brigade can effectively pass ABCS, FBCB2, relevant information, video, voice, data, SIPRNET and NIPRNET at all times. With so many individual networks, some meshed together, others "stove piped" making changes in the architecture typically results in secondary and tertiary cascading effects much of which cannot be anticipated. The brigade is writing the book on transformation, the S6s and the Signal Company are writing the future of Objective Force communications. Digitization and the nature of the systems fielded to the brigade have resulted in a "self discovery" of sorts with what does and does not work and what need improvement. Though conceptually sound and seamless in its genesis, the brigade architecture is nowhere near the modular, scalable and integrated system it was designed to be.

The SBCT signal concept works. At times systems seem to have been "forced" upon the brigade for use and integration when other simpler solutions would have obtained the same result. The O&O of the brigade has been realized but in combat the question generated was, "Is the rest of the Army ready for transformation?" From a signal standpoint the answenot quite." The community understands this as evident of the numerous ABCS, BFT and transformation initiatives that were rapidly fielded into Afghanistan and Iraq for "analog" units. The density of these systems in theater assisted in the brigade's integration with other units, though the IP based WAN architecture of the brigade remains the difficult component to integration.

Finally, the most important component to facilitating the brigade's communications are the Soldiers. The Signal company and the brigade S6 foster a unique operational and command relationship. Structured where the Signal company commander is the NOSC OIC and assists the brigade S6 in operational planning, and the S6 directs plans and operations; the relationship between the two officers is paramount to success. More often than not the organizational division of the Signal company (and its Soldiers) and the brigade S6 is nonexistent which enhances the teamwork and mission accomplish. Ownership of the brigade communications plan from the brigade down to the individual operators is the lynchpin to operational success.

Overall the brigade's communications architecture is working and working better than anyone had ever truly expected. As stated at the beginning of this assessment, the brigade was built on the Stryker Infantry Carrier Vehicle, and is enjoying unparalleled success as the premier fighting vehicle in Iraq. But the digital heartbeat, the C2 enabler is all Signal transformation, transformation that is…digitally deployed.

MAJ Fischer is executive officer of

the 29th Signal Battalion stationed in Balad, Iraq. He served with the 3rd Brigade, 2nd Infantry Division (SBCT), brigade Signal officer on deployment in Iraq. Prior duty assignments were as the deputy chief, Team Signal - Fort Lewis, in support of the Brigade Coordination Cell where he assisted in the development of 3/2 SBCT signal systems and architecture. MAJ Fischer's other assignments include Squadron S6, 2/11 ACR and the Signal Observer/Controller for the Mechanized Trainers (Scorpions) at the National Training Center. He graduated from Santa Clara University, Calif., in 1990 as a Signal officer.

Definition

TRACNET – isolation of the EPLRS network where only radios in that network can provide SA andmessaging services internal to that group.

Acronym QuickScan

ABCS – Army Battle Command Systems
ABN – Airborne
AD – Armored Division
ADVON –Advanced Echelon
AES – Advanced Encryption Standard
AFATDS – Advanced Field Artillery Tactical Data System
AI – Actionable intelligence
AI – areas of interest
AIL – Allowable Input Link
AKO-S – Army Knowledge Online-SIPRNET
ALD – Authorized Load Date
ALE – Auto Link Establishment
AMDWS – Air and Missile Defense Workstation
ANDVT – Advanced Narrowband Digital Voice Terminal
AO – Area of Operation
ASAS – All Source Analysis System
ASAS-L – All Source Analysis System -Light
ASN – Autonomous System Number
ATM-SEN –Asynchronous Transfer Mode Small Extension Node
BCBL(G) – Command Battle Lab-Fort Gordon
BCC – Brigade Coordination Cell
BCT -- Brigade Combat Team
BFT – Blue Force Tracker
BGP – Border Gateway Protocol
BLOS – Beyond-Line-of-Sight
BRSS – Brigade Remote Subscriber System
BSB – brigade support battalion
BSN – Brigade Subscriber Nodes
C2 – command and control
C4I – Command, Control, Computers, Communications and Intelligence
CA – Civil Affairs
CECOM LAR – Communications Electronics Command Logistics Assistance Representative
CERTEX I – Certification Exercise I
CFLCC – Coalition Forces Land Combatant Commander
CJTF-7 – Coalition Joint Task Force -7
CMO – Civil Military Operations
CNR – Combat Net Radio
COA – Course of Action
COE – Contemporary Operating Environment
COMMEX – Communications Exercise
COMSEC – Communications Security
COP – Common Operational Picture
COTS – commercial-off-the-shelf
CP – command post
CSC – Convoy Support Centers
CSMA – Carrier Sense Multiple Access
CSSCS – Combat Service Support Control System
CTC – Combined Arms Training Center
CTCP – Combat Training Command Post
CTSF – Consolidated Training Support Facility
CV – Command Variant
CVC – Combat Vehicle Crew
DAMA – Demand
DC2R – Digital Command and Control Rehearsal
DC – Direct Current
DISA – Defense Information Systems Agency
DKETS – Deployable Ku Band Earth Terminal
DNS – Delta Network System
DTG – Digital Transmission Group
DTSS – Digital Topographic Support System
EETGMO – Extended Range Enhanced Trunk Group Modular Oderwire
EIGRP – Enhanced Internet Gatway Routing Protocol
ENM – EPLRS Network Management
EPLRS – Enhanced Position Location and reporting System
FBCB2 – Force XXI Battle Command Brigade and Below
FEC – Forward Error Correction
FIPR – Flash Immediate Priority Routine
FM – frequency modulation
FMC – FBCB2 network connectivity
FOB – Forward Operating Base
FRAGO – Fragmentary Order
FXO – Field Exchange Officer
FXS – Field Exchange Service
GAC – ground assault convoy
GBS – Global Broadcasting System
GD-FEC – General Dynamics-Foward Error Correction
GRU – Grid Reference Unit
GUI – Graphical User Interface
HC-LOS – High Capacity Line-of-Sight
HDR – High Data Rate
H&I – Harassment & Interdiction
HMMWV – Highly Mobile Multi-Wheeled Vehicle
HMT –High Mobility Trailer
HPW – High Performance Waveform
HQ DA – Headquarters Department of the Army
IA – Information Assurance
IAVA – Information Assurance and Vulnerability Assessment
ICV – Infantry Carrier Vehicle
IER – Information Exchange Requirements
IKEK – Integrated Key Encryption Key
IKSS – Initial Ku Satellite System
INC – Internet Network Control
INE – In Line Encryptor
INMARSAT – International Maritime Satellite
JRTC – Joint Readiness Training Center
JTRS – Joint Tactical Radio System
KEYMAT – Key Material
LAN – Local Area Network
LCMS – Local COMSEC Management System
LCN – Logical Channel Number
MCPT-I – MILSTAR Communications Planning Terminal-Integrated
MDL – Mission Data Loader
MDR – Message Data Replicator
MBITR – Multi-Band Inter-Intra Team Radio
MCS – Manuever Control System

Acronym QuickScan

MICH – Modular Integrated Communications Helemet
MICO – Military Intelligence Company
MILID – Military ID
MILSTAR – Military Strategic and Tactical Relay
MNB-N – Multi-National Brigade North
MND – Multinational Division
MPT – Medium Power Transmitter
MRT – Master Reference Terminals
MSE – Mobile Subscriber Equipment
MTOE – Modified Table of Equipment
NAV – Network Allocation Vector
NCF – Non-Compliant Forces
NCS-E – Network Control Station-EPLRS
NL – Needline
NMC – Non Mission Capable
NOC – Network Operations Center
NOC-V – Network Operations Center-Vehicle
NOSC – Network Operations Security Center
NTC – National Training Center
NTDR – Near Term Digital Radios
O&O – Operational and Organizational
OIC – officer in charge
ONS – Operational Needs Statement
OPORD – Operations Order
OR – Operational Readiness
OS – Operating System
OSPF – Open Shortest Path First
OTAR – Over the Air Rekey
PC MCIA – PC Card
PEO-C3T – Program Executive Office – Command, Control and Computers, Tactical
PDSS – Pre Deployment Site Surveys
PM – project managers
POL – Petroleum Oil Lubricants
PSYOPS -- Psychological Operations
PVC – Permanent Virtual Circuits
QEAM – Quick Erect Antenna Mast
QRF – Quick Reaation Force
R/R – relay/retransmission
RO/RO – Roll On/Roll Off
RSID – Radio Set ID
RSO – reception, staging and onward movement
SA – Situational Awareness
SAR – Satellite Access Request
SATCOM – satellite communications
SBCT – Stryker Brigade Combat Team
SBE – stay behind equipment
SBU – Sensitive But Unclassified
SEP – Signal Entry Panel
SINCGARS –Single Channel and Air Radio Systems
SMART-T– Secure Mobile Anti-Jam Reliable Tactical-Terminal
SOP – Standard Operating Procedure
SOTM – SATCOM On-the-Move
SSS – Single Shelter Switch
STE – Secure Telephone Equipment
STEP – Strategic Tactical Entry Point
STU-III – Secure Telephone Unit III
SU – Situational Understanding
t/l – tactical Internet
TAC – Tactical
TEA – Television Equipment Associates
TDMA – Time Division Multiple Access
TFO – Task Force Olympia
TIM – Tactical Internet Manager
TIMS – Tactical Internet Manager System
TOA – Transfer of Authority
TOC – Tactical Operations Center
TRI-TAC – Tri-Service Communications System
TSN – Tactical Switch Node
TT – Traffic Terminals
TTP – tactics, techniques and procedures
UTO – Unit Task Organization
UTR – Unit Task Reorganization
VDTG – Virtual Digital Transmission Group
VOIP – Voice Over Internet Protocol
WAN – Wide Area Network
WMI – Windows Management Instrumentaion
WNW – Wideband Network Waveform

Lessons from GIG Expansion in OEF/OIF

by CPT Brad Grane

The newly reactivated 160th Signal Brigade is extending the Global Information Grid to the warfighter by installing commercial communications facilities and capabilities throughout the U.S. Central Command area of responsibility. Having worked in both the Afghanistan and Iraqi theaters, I was fortunate to be on the cutting edge of developments that will be impacting Soldiers, Sailors, Airman and Marines for years to come.

The transition from a battalion of the 11th Signal Brigade with a strategic mission to two battalions and a full brigade headquarters happened at quite an opportune time for the 54th Signal Battalion. For the past 13 years, the 54th has provided fixed-station communications throughout the CENTCOM AOR. With the growing requirements of the Global War on Terror, the responsibilities of 54th were shared with the newly reactivated 25th Signal Battalion, located in Qatar, and a new brigade headquarters, located in Camp Arifjan, Kuwait.

The 25th gained responsibility for the reduced U.S. presence in Saudi Arabia, and the increased presence in Qatar and the central Asia republics while 54th retains operations in Kuwait and is expanding into Iraq. The standup of the 160th Signal Brigade and 25th Signal Battalion was accelerated due to the wartime nature of the theater. Herculean efforts on the part of the Army Staff and Network Command/9th Army Signal Command put boots on the ground more than a year earlier than originally planned.

To meet the rapidly growing number of technical-control facilities the 160th developed the Direct Signal Support Team concept. The DSST is usually headed by a first lieutenant or captain with a sergeant first class or staff sergeant as non-commission-officer-in-charge. When possible, additional NCOs and soldiers of various military occupational specialties are included to round out the team.

To meet the rapidly growing number of technical-control facilities the 160th developed the Direct Signal Support Team concept.

In the future, the team will have a contractor logistics technician and a Department of the Army civilian contracting officer's technical representative.

One of the hurdles in executing the DSST concept is filling the DA civilian and contractor positions with qualified and motivated individuals. The OIC supervises contract execution by the civilian contractors and also provides liaison between the military and contractors. He/she lives the phrase "Responsible for all the unit does or fails to do." DSSTs were formed from organic assets as well as augmented by Soldiers from other units.

The main purpose of the TCF and DSST is to relieve tactical signal units so that they may re-deploy and reconstitute for other missions. They bring the additional capabilities of commercial communications to the lowest level possible. A DSST is essentially a directorate of information management (-) and in some cases will grow to a full sized company DOIM with the upcoming activation of new signal companies.

In both theaters a higher level organization handles the Engineering and Installation, Network Command in Operation Enduring Freedom and the Kuwait Iraq C4 Commercialization program in Operation Iraqi Freedom. Operation and Maintenance is handled by various contractors, the major portion being done under the existing ITT-TACSWA contract. The higher level E&I teams install the equipment and 160th/ITT team assumes O&M responsibility.

Promina series multiplexers form the nodes of the network. They are networked via Deployable, Ku-band, Earth Terminals, USC-60 Tri-band satellite terminals and both commercial and tactical microwave systems. Standard deployable data packages are the basic structure but are being replaced by rack mounted high-end commercial equipment in fully climate-controlled facilities with raised floors and full sized cable vaults supported by above- and below-ground cable runs.

Voice services are primarily provided by REDCOM IGX voice switches with gateways into the SL-100/DSN network. Long term plans involve moving or purchasing SL-100 or SL-1 switches for some of the larger, enduring sites in Iraq and possibly Afghanistan.

Voice Over Internet Protocol is a relatively new technology to the military that is paying big dividends. Seventy-five percent of users do not require the precedence offered by the DSN network and an IP phone with a gateway into the DSN network provides all the

services of POTS except the preemption. A DISA standard for VOIP will allow this technology to reach its full potential.

Customer support is the number one priority. Mission essential communications must be available, reliable, high quality and low latency. This holds true throughout the Regiment. What follows are some brief lessons learned that applied to both the OEF and OIF theaters during my 12-month tour of duty.

The single greatest challenge to this process is the bureaucracy involved with commercializing communications infrastructure. I witnessed the same symptoms in the OEF and OIF theaters. It is absolutely essential that the process be expedited in order to reap any benefits for OIF II and see moderate progress through OIF III. In most cases, the communications requirements belong to a combatant commander who is used to working with tactical signal units who can "make it happen" within hours or days. FOB and camp commanders do not want to hear anything about the requirements to solution process and it is very frustrating to tell them "There is nothing we can do to help you because our contractors only do O&M not E&I." These combatant commanders are willing to distribute funding from their operational accounts to the site OIC in an attempt to purchase an interim fix in a reasonable amount of time.

Over time, the interim fixes become permanent because the site communications teams have worked with engineers or other units to lay cable/fiber and purchased enough piecemeal telecom infrastructure via PR&C's/CARB process despite the "No E&I" aspect of our mission. By the time the commercialization engineers and program managers arrive, the local signal team has "made it happen" to an 80 percent solution that offers very little value added to upgrade the infrastructure any further via the higher level E&I organizations.

Changing requirements and "good ideas" can drag a project to a near stand still because the E&I teams work with 60-120 day lead times on equipment and contracts. By constantly changing requirements the supply flow is disrupted leading to missed deadlines, wasted money and more than a few developmental discussions about an officer's career. It is essential that a brave S/C/J-6 staff officer tactfully brief the commander on the repercussions of changing requirements and new ideas. A deadline for changes must be set and adhered to and base commanders must be made to understand challenges. Even the non-doctrinal "good-idea-cutoff-line" is useful to make them understand that constant change means no progress. Further operational capabilities can be added to the base system once it is complete. The same concept applies to real estate management when determining locations for communications facilities. The procurement community calls this "spiral development" and we need to look at the same concept for managing telecommunications commercialization.

Large bandwidth satellite infrastructure is the only thing that seems to be out of reach of the DSST.

Large bandwidth satellite infrastructure is the only thing that seems to be out of reach of the DSST. These items were always provided by the E&I organizations. A suggestion would be to allow 54th and 25th DSST's along with the local CJ6 to have access to KICC/NETCOM funding in order to allow parallel execution and improvement at various camps. In addition, more KICC/NETCOM personnel are needed in order to execute contracts for camps and be able to obligate funds away from the bureaucracy and red tape.

Help Desk - Enforcing the Information Management Officer concept will greatly reduce the workload of the Help Desk. The users' first line of support should be the unit IMO. With this system, the help desk and NET/SYS Admins have a single point of contact for each organizational unit to deal with for all IT needs. Periodic IMO meetings allow enforcement of policy as well as IA protection/prevention.

Contractors - It is essential to get the contractors integrated into all aspects of operations as soon as possible. These contractors are paid for their experience and their subject expertise. We pay them a great deal of money for their certifications and experience that they gain in the civilian world because they don't have to worry about sweeping the motor pool or performing CTT.

They have vast amounts of knowledge that our Soldiers do not have the opportunity to learn. By integrating them early, they can learn the nuances of the local operating environment and then transition to complete control of the network in order to free Soldiers for other missions or redeployment. In some cases the contractors have been constricted to one third of their full potential in operating the voice/data networks. Not only does the Army pay them to perform below the standard, but they are forced to stand idly by while soldiers attempt tasks that may be beyond their skill/experience level. In some cases the contractors are called in at the end, after days of outages and the military unit finally requesting additional support.

It is important that contractors understand their relationship with the military. Mentioning that they work for 54th Signal Battalion is a much more effective way of dealing with military and other contractors and frees them of the stigma that may be attached to the particular company that they work for. Commercial rivalries must be set aside in the contemporary operational environment. Not wanting to work with company X or worried that company Y will steal their

business practices does nothing to increase mission accomplishment.

Contractors must also understand that they represent the U.S. almost as much as Soldiers downtown do when they are dealing with local nationals. They must contribute as much as possible to the winning of the hearts and minds.

Supply Challenges - Being forward deployed without their higher headquarters, the DSSTs are forced to rely on improvised supply methods. In the earliest stages this is accomplished through building mutually beneficial relationships with adjacent units, especially engineering and supply units. A lieutenant or staff sergeant can easily find themselves in charge of a $25,000 cash monthly field-ordering officer account. This is a direct leadership challenge that is not taught in any manual or course that I have been to and directly reflects on an individual's abilities to accomplish the mission through intangible characteristics such as "people skills." Success is about relationships and not chains of command.

The greatest logistics challenge we faced is pallet-sized cargo transportation. The transportation system at the unit level is broken. Numerous pallets of C4 equipment were lost or misdirected in both the Iraq and Afghan theaters. Pallets frequently get mislabeled and end up at the wrong destination only to sit in the yard for weeks. The Air Force is not proactive in linking lost cargo to its owners; this responsibility falls solely on the owner of the equipment.

The RF tracking tags are only affixed with zip ties and frequently fall off after getting bumped by another pallet, or worse, their batteries run out. Tasking a Soldier to escort the pallet proved unsuccessful because Soldiers would sit at the APOD for days only to be told that they are not allowed to escort their pallet. Once out of their control, it is impossible to tell what would happen to the pallet. The most successful method is to pack the supplies into one to two footlocker-sized cases per person and have one or two individuals fly to a location with the equipment transported as their personal baggage. The courier drops off the equipment and flies home to make another trip. Commercial shipping companies provide an effective, yet expensive option once the theater matures.

Shortening the engineering, acquisition, and installation of communications infrastructure is essential to providing improved communications to the war fighters and staffs in the OIF/OEF theaters. Proving our worth as a Regiment prepared for change and able to adapt is essential to remaining relevant and keeping up with technology in order to better serve our customers.

CPT Grane was most recently the A/S-3(FWD) of the 54th Signal Battalion in Victory Base, Iraq, and previously the DSST/DOIM OIC at the American Embassy and CFC Headquarters in Kabul, Afghanistan. He served in various other positions including Node Center Platoon Leader, Mechanized Infantry Platoon Leader, and Support Platoon PL in the 1st Cavalry Division. CPT Grane is a 1998 graduate of the University of Illinois with a degree in geography. *Special thanks to LTC John F. Schrader, 54th Signal Battalion commander, for help with this article.*

Acronym QuickScan

AOR – Area of Responsibility
APOD – Aerial Port of Debarkation
C4 – Command, Control, Communications and Computers
CARB – Combined Acquisition Review Board
CENTCOM – U.S. Central Command
COTR – contracting officer's technical representative
DA – Department of the Army
DISA – Defense Information Systems Agency
DKET – Deployable Ku-Band Earth Terminal
DOIM – Directorate of Information Management
DSN – Defense Switched Network
DSST – Direct Signal Support Team
E&I – Engineering and Installation
FOB – Forward Operating Base
FOO – field ordering officer
GICIL – good idea cutoff line
GIG – Global Information Grid
GWOT – Global War on Terror
IA – Information Assurance
IGX – ISDN Gateway Exchange
IMO – Information Management Officer
KICC – Kuwait Iraq C4 (Command, Control, Communications and Computers) Commercialization
NETCOM – Network Enterprise Technology Command
O&M – Operate and Maintain
OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom
POTS – Plain Old Telephone Service
PR&C – Purchase Request and Commitment
RF – Radio Frequency
TACSWA – Total Army Communications, South-west Asia
TCF – Technical Control Facility
VOIP – Voice over Internet Protocol

Laying the lines of communication

Reprinted with permission from Federal Computer Week.

Since November '04, Army colonel has set up thousands of Internet accounts

by Michael Hardy

If you think network projects are difficult, try doing them in Baghdad. The capital of Iraq, battered for more than a year by weapons of war, does not have the kind of infrastructure that is common place in American cities. The Coalition Provisional Authority, however, has been scrambling to develop something resembling a modern Internet service.

Army COL Tom Catudal has been leading the effort, serving as director of communications and information technology for the CPA. His mission is to install, operate and maintain communications and IT network services for the CPA in Baghdad and throughout Iraq.

The goal is to include line-of-sight radio links to connect all of the CPA elements, along with Microsoft Corp. Exchange e-mail and a local-area network.

To put it mildly, conditions are less than ideal, Catudal said. The concrete buildings are not suited for wireless connections, and much of the wiring he expected to find in the city is gone. The looting of museums in Baghdad was a more well publicized problem, but looting of copper and fiber for sale on the black market has become much more of a practical issue.

"I'd heard about the looting, but I didn't realize how extensive it was into all the fiber and copper connections street side and down into the manhole covers," he said. Catudal said he had expected the cables to be there, and now has to figure out how to make do with fewer of them.

If he were home and working at the Pentagon, he could pick up a phone and order what he needed. In Baghdad, "the supply line is 8,000 to 10,000 miles long," he said. "If you need something that you would buy locally in the United States, there's nowhere you can go with your credit card to buy items. Wiring, patches — it's just not available."

Infrastructure issues have plagued the Iraq recovery effort, said Joe Draham, who last year temporarily left his post as vice president of government relations and congressional affairs at GTSI Corp. to become a counselor to the CPA's chief operating officer, Joseph "Keith" Kellogg. Kellogg, a retired lieutenant general, resigned from his seat on GTSI's board of directors to take the position and invited Draham to come along.

The country's infrastructure is not only damaged from the war, but resistance fighters still attacking coalition forces are adding to the wreckage, Draham said. "One of our challenges is, you put a plan in place and two days later part of the plan is blown up," he said.

Science Applications International Corp. is the prime contractor on the Internet infrastructure project, and Raytheon Co. is a subcontractor. The companies' employees work 72 hours a week — sometimes more — trying to get the project done quickly, Catudal said.

Since he began work in November, Catudal has established about 4,000 non-classified accounts and about 2,000 classified ones. The network he has built so far, using duct tape and other less-than-ideal techniques, logs about 3,000 daily sign-ons.

By the time the CPA turns governance of Iraq over to Iraqis, planned for June, Catudal expects the network to have around than 6,000 daily users. After that, Iraq's new government will be in charge. Catudal's network will support U.S. Forces and U.S. Embassy personnel after July 1, 2004.

"We're providing as close to world-class services as we can," he said.

Catudal's team of contractors also has to avoid attacks from resistance forces, he said.

"Obviously there is a threat," he said. "My contractors are not shooters, so we have to coordinate with the coalition forces to provide security as we move in and around Iraq. There are only a limited amount of military personnel, so that can create delays."

"We work in the presidential palace," said Draham, who returned to Washington, D.C., earlier this month. "You feel secure in that environment. When you go outside of that environment, everybody's heavily armed."

He predicted that Iraq will become prosperous after the destroyed infrastructure is rebuilt.

"If you look at what the oil wealth has done for Kuwait, it's phenomenal," Draham said. "Iraq has substantially more oil, but the infrastructure was allowed to deteriorate."

The country won't gain from the oil wealth until it is secure, he said. The oil flows through 932 miles of pipeline that saboteurs can easily break.

Draham, who said he has been "preparing for this job my whole

Left, Jeff DePasquale, vice president and client director for Gartner, Inc. and COL Joseph T. Catudal standing on top of the Government of Iraq Forum with the Ministry of Defense Building in the background, Baghdad Iraq. Also seen is the former Ministry of Information building (pyramid shaped) in the distance to the right.

life," took part in developing the strategic communication plan that will guide the restoration of services throughout Baghdad and the country. And despite the heavy construction that makes it difficult for wireless signals to penetrate buildings in the capital's downtown, Draham predicted that wireless communications will play a major role in the country's communications capabilities.

That strategic plan is one of the few things that is normal about the situation in Iraq, said Frank Dzubeck, a telecommunications consultant and president of Communications Network Architects Inc. in Washington, D.C.

"This is the right way to go," he said. "Implementation is an issue that stands out with respect to what's going to occur — whether the governing council follows through, whether the allies agree to this and how funding occurs for this. It's a huge, gigantic list of issues. But from the planning perspective, it's an absolute necessity. If you don't do it, you're dead."

Internet Baghdad

The Iraqi Coalition Provisional Authority is trying to bring modern Internet service to the war-torn country so coalition members can securely exchange data. The list below is an outline of the goals for Baghdad's Internet services:

*Use best business practices for maximum efficiency.

*Free up Army tactical communications, which have been transmitting CPA data.

*Plan for contingencies, including bombs or other attacks that could disable part of the network.

*Plan for a June 30 transition from the CPA to Iraqi control; the State Department will continue oversight but DoD will most likely have the bulk of the communications mission.

*Secure and support data sharing among USG Agencies and Iraqi Ministries after installing the network.

Mr. Hardy writes for Federal Computer Week, *and has 18 years experience in journalism. He has received the Scripps Howard Foundation's Meeman Award for coverage of environmental issues, and the Western Publications Association's Maggie award for best news story in a trade magazine. A 1986 graduate of the University of West Florida, Pensacola, he has covered technology, business and government for a variety of publications since 1997. He lives in Maryland. Contact him at* mhardy@fcw.com.

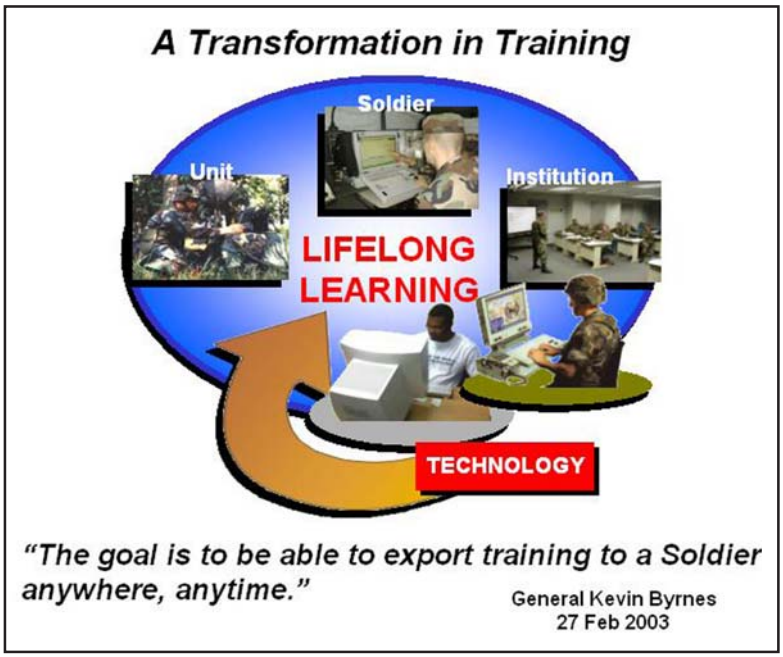
Acronym QuickScan

CPA – Coalition Provisional Authority
IT – Information Technology

Training update

A transformation in training: Lifelong Learning Update

by Barbara H. Walton



Lifelong Learning, the future for training and education to the force, uses traditional schoolhouse instruction and the latest methodologies in distance learning and creates a blended environment that supports the Soldier regardless of location.

Employing the most cost effective mix of locations, materials and methods, delivered just in time, on demand, the Signal Center is putting into practice the Training and Doctrine Command commanding general's challenge to "export training to a Soldier anywhere, anytime."

The Signal Center has been furthering its progress in Lifelong Learning's four tenets: Assignment – Oriented Training, Simulations, the Lifelong Learning Center and the Virtual Campus concept.

In November 2003, we participated on the AOT Task Force with G1 and G3 to write the Army's definition of Assignment-Oriented Training. When approved, this definition will become part of Army's personnel policies and procedures.

We delivered complete AOT Concept Action Plans to TRADOC for our four AOT Military Occupational Specialties that outline the resource requirements for Lifelong Learning for each of these specialties. We continued to train four of our MOSs in AOT mode.

We continue to develop our simulations products. Three are complete and available on the University of Information Technology Lifelong Learning Center website https://uit.gordon.army.mil

- AN/TRC-173B for MOSs 31R and 31F
- AN/GSC-52 for MOS 31S and Joint Services
- FBCB2 for MOS 31U and Stryker Brigade, plus all Soldiers who need digital training

Four are under development and scheduled for delivery in late 2004:

- BSN for Stryker Bde MOSs 31P, F and R
- Digital TOC, Networks and TIMS for ISYSCON for MOS 74B and other Soldiers who need digital training

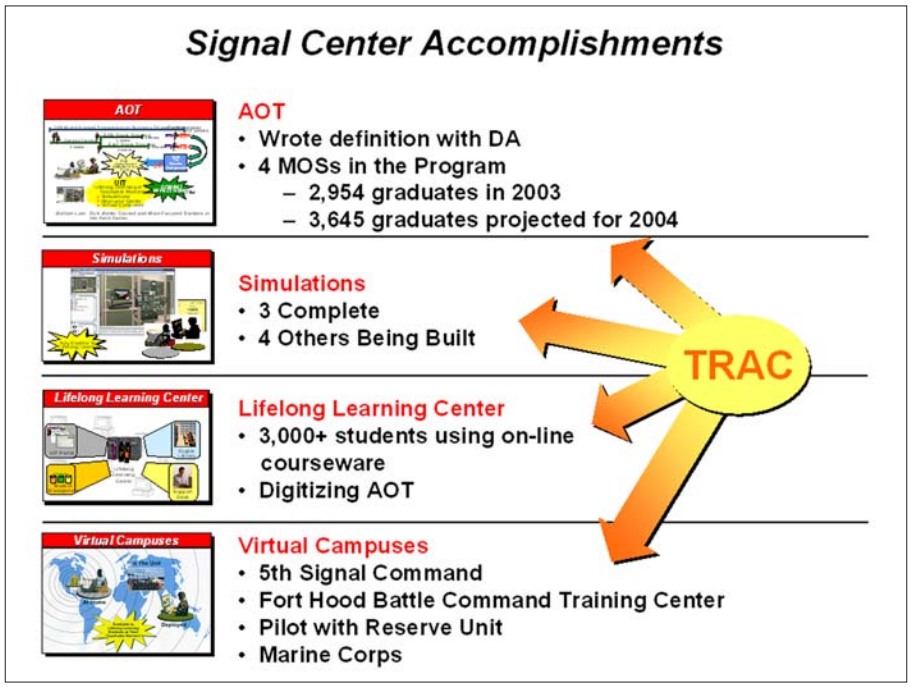
We've made significant progress developing our University of Information Technology Lifelong Learning Center, formerly known as the Resource Center, to make it useful to the Regiment. There are currently over 10,000 registered users, 3,000 of whom use the LLC to train on everyday. – The population has increased more than 5,000 since December, and it is still growing. We are working every day to add to the site's collection of materials and to standardize the way we deliver instruction. We are loading the entire content of each of our AOT MOS courses onto the Lifelong Learning Center to make this training available to Soldiers worldwide.

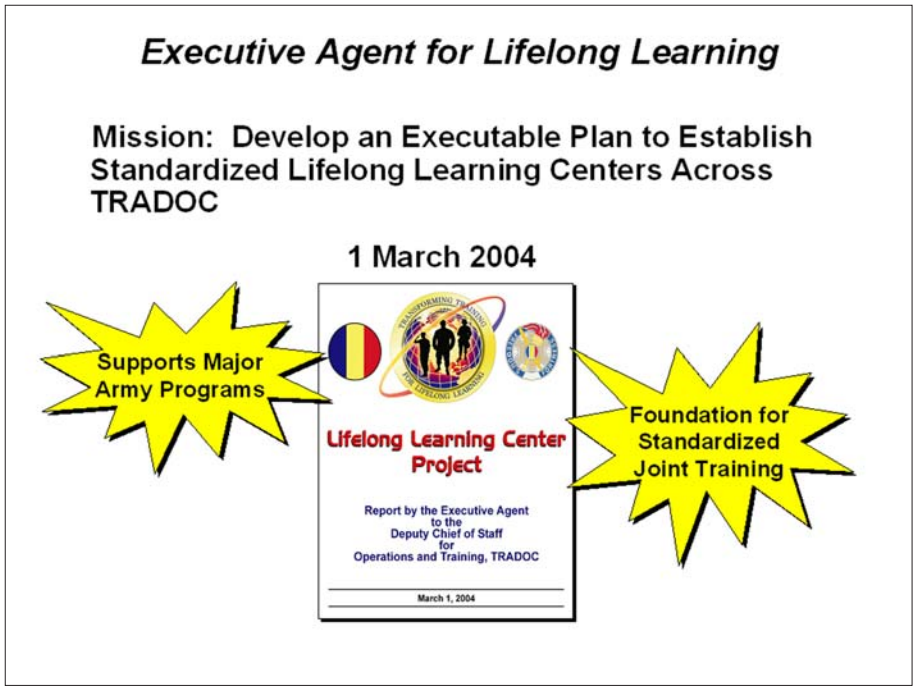
We established a Virtual Campus site with 5th Signal Command in Germany to share content. We have a presence at Fort Hood as well, and in January we began a pilot with a local Reserve unit.

Twelve Reserve Component students and their instructor began using the Lifelong Learning Center to access course materials for their 74B10 training. Initial reports are good, and the soldiers are looking forward to the possibility of obtaining their MOS in less than the two years it was to have taken them using the TATS process.

We want to share content across the services so that this Lifelong Learning Center becomes a Joint LLC. In January we began dialoging with the Marine Corps Communications School in Quantico to take the first steps in this direction.

The TRADOC Analysis Center is providing an assessment of the effectiveness of each of these tenets. Their study is still new, however preliminary results (feedback from AOT-trained Soldiers and their





supervisors) is favorable.

Executive Agent for Lifelong Learning

The Lifelong Learning Center is the hub of the LLL process. Here every Soldier/unit or institution will come for one stop training/education/information as either a student in residence or a Soldier in the field. Instructors, training developers, students and their supervisors will all use this capability to do their jobs. During the first resident experience Soldiers will learn the knowledge, skills and abilities of lifelong learning as part of their basic skills.

Each regiment's LLC will provide standardized training on demand to the active force and the Reserve Component. The LLC will provide ease of use to the student, the instructor and the training developer and be adaptable to any training challenge.

Because of the success we achieved with our Lifelong Learning Center, the Signal Center was designated, in October 2003, as the TRADOC Deputy Chief of Staff for Operations and Training Executive Agent to develop a plan to establish LLCs across TRADOC. The initiative will provide TRADOC an opportunity to consolidate many ongoing efforts throughout the schools and provide a combined resource approach to move the LLL process forward.

We conducted an LLC workshop in December with all TRADOC schools and members of the DCSOPS&T staff present. Following the workshop, the Fort Gordon team visited all schools during January and February to review each schools plan for LLL, and gather resource requirements.

Our report provided DCSOPS&T a refined dollar estimate and a blueprint for future LLC implementation.

The future role of the EA includes developing implementation plans for schools funded for LLCs and to work other implementation projects for the DCSOPS&T and the schools.

Moving Lifelong Learning Forward

During our visits to the other TRADOC Schools we learned that we need policies and procedures to provide guidance and standardization as we implement lifelong learning. Issues need to be addressed such as managing AOT,

· standardizing simulations products,
· using LLL for the Reserve Component,
· standardizing the training development process through LLL,
· revising doctrine to account for LLL,
· incorporating LLL into requirements documents
· training staff and faculty to become lifelong trainers,
· and designing a resourcing model that supports the requirements of this new way of training and education.

We also learned that we face many of the same challenges. We came to understand that LLL will not only support the current force, but will meet the Army's future training and education challenges related to UA/UE, FCS, Unit Manning, the Battle Command Knowledge System, CSA Initiatives (i.e., Task Force Network), and most importantly; training and education support to an Army forward deployed and at war.

Lifelong Learning Center enabling a transformation in training

In the future, the Army's Training and Leader Development Plan, through its centers and schools, will continue to be the foundation of Army doctrine, initial military training and professional military education.

No longer will the training institution's influence be tied to a geographical location. Through the use of information technology and distributed learning, future institutions will become classrooms without walls, capable of providing the right education and training on demand, to the right Soldier or leader, at the right time.

Mrs. Walton is a Supervisory Instructional Systems Specialist in the Directorate of Training. She is currently Chief of the University of Information Technology Division. Ms Walton has been involved in the lifelong learning initiative for the Signal Regiment since 2001.

Acronym QuickScan

AOT – Assignment - Oriented Training
BSN – Brigade Subscriber Node
CSA – Chief of Staff of the Army
DCSOPS&T - Deputy Chief of Staff for Operations and Training
EA – Executive Agent
FBCB2 – Force XXI Battle Command Battalion/Brigade and Below
FCS – Future Combat System
G1 – Army Personnel
G3 – Army Operations
ISYSCON – Information System Control
LLC – Lifelong Learning Center
LLL – Lifelong Learning
MOS – Military Occupational Specialty
RC - Reserve Component
TATS – The Army Training System
TIMS – Tactical Information Management System
TOC – Tactical Operations Center
TRAC – TRADOC Analysis Center
TRADOC - Training and Doctrine Command

TSM update

Updates from Training and Doctrine Command systems managers for satellite communications, tactical radio and Warfighter Information Network-Tactical

TSM-TR

Joint Tactical Radio System Review

On April 26, 2004, Army acquisition officials convened the Army Systems Acquisition Review Council to conduct a Milestone B decision review for the Joint Tactical Radio System Cluster 5 Program. The Cluster 5 program is the Army-led portion of the Joint Tactical Radio System development effort to build the handheld, manpack and small form fit variants of JTRS.

The meeting was chaired by Claude M. Bolton, Army Acquisition Executive, and attended by GEN George W. Casey Jr., Vice Chief of Staff of the Army along with other members of the Army staff. Bolton acknowledged and approved an acquisition strategy change to move the single-channel hand-held radio development from the first spiral and include it in the second spiral.

The JTRS Cluster 2 program will provide systems to meet the Services single-channel handheld near-term requirements. At the close of the review Bolton approved the program's entry into the System Development and Demonstration phase and stated that he would sign the proposed Acquisition Decision Memorandum with minor modifications. The Army had previously postponed contract award of the handheld, manpack and small form-fit contract pending the results of this review.

Although the first production JTR sets for vehicular and rotary wing platform applications are not expected for initial fielding until second quarter of fiscal year 2007, the JTRS Joint Program Office has already received interim software builds for four of the six JTRS key performance parameter waveforms. JTRS KPP waveforms are the minimal set waveforms that each JTR set must support. All six of the JTRS KPP waveforms to include SINCGARS ESIP, HAVE QUICK II, EPLRS, Link-16, SATCOM and the new Wideband Networking Waveform will be demonstrated, some with limited functionality, during the JTRS Early Operational Assessment during the second quarter of FY05.

Enhanced Position Location Reporting System Testing was successfully completed in early April 04 at Fort Huachuca. Software tests verified the latest upgrades to the EPLRS Radio Set. The U.S. Navy Space and Naval Warfare Systems Command was awarded the production contract, which will result in the building of all remaining Net Control Stations. *(These are also referred to as the ENM).*

Initial test and delivery of the NCS-A began in April 2004. Plans for fielding to SBCT-4 are ongoing to support Cohesive Operational Readiness Training and fielding later this year. The 6th Annual EPLRS Multi-Service Meeting was hosted by the Navy on April 20-21 2004 in San Diego, Calif.

The Enhanced Position Location Reporting System fielding preparation continues. Initial fielding of assets to support the 172nd Signal Company began during early January 2004 and continues. NET Contractors are on-site continuing to train the operation of the EPLRS radio set.

A newly improved version of the EPLRS Network Control Station was fielded to the 3rd Stryker Brigade Combat Team in Alaska. Retrofit of existing EPLRS-equipped units such as the 4th Infantry Division, 1st CAV, SBCT-1, SBCT-2, will be completed during the next two calendar years. The retrofit and training of the 4th ID is tentatively scheduled for August/September. EPLRS is one of the key data communications backbones, which supports the Army's tactical Internet and ADA sensors as well as unit weapons systems. The ENM provides greater network management capability and operator flexibility compared to the current EPLRS NCS.

Definitions

HAVE QUICK II, – Is not an acronym, actual name of radio system

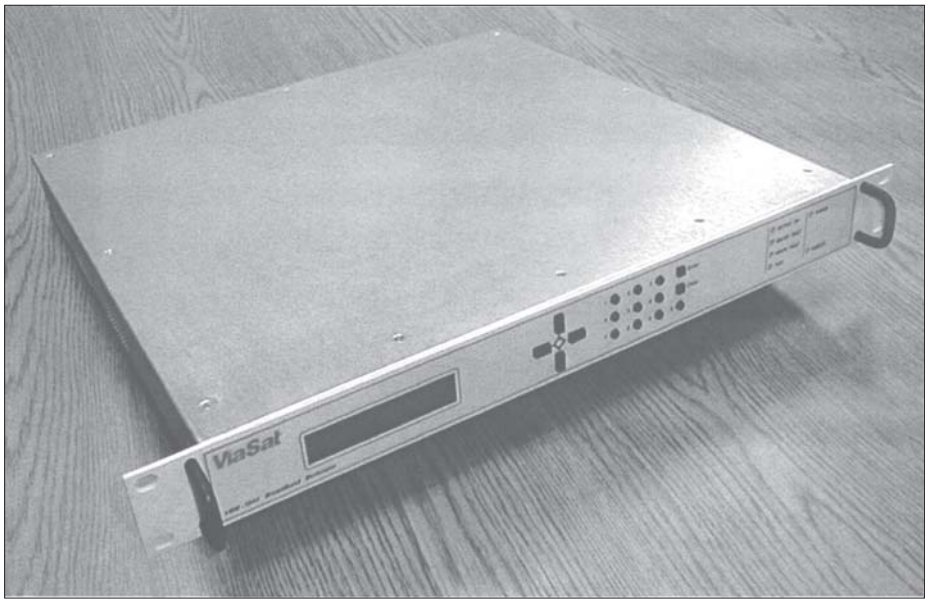
Link-16 – Not an acronym but a tactical digital link used by the military to transmit data to build an air picture

Acronym QuickScan

COHORT – Cohesive Operational Readiness Training
ENM – EPLRS Network Manager
EPLRS – Enhanced Position Location Reporting System
FY – fiscal year
ID – Infantry Division
JTRS – Joint Tactical Radio System
KPP – key performance parameter
NCS-A – Net Control Stations.
NCS – Network Control Station
NCS-A – Net Control Stations
SBCT-3 – 3rd Stryker Brigade Combat Team
SINCGARS – Single-Channel Ground-to-Air Radio System
SINCGARS ESIP – SINCGARS Enhanced System Improvement Program
SPAWAR – Space and Naval Warfare Systems Command
VCSA – Vice Chief of Staff of the Army

Enhanced Bandwidth Efficient Modem

by Frank Stein



The military is seeking more capacity for high-speed broadband and multimedia transmissions. The production and fielding of the Enhanced Bandwidth Efficient Modem is intended to help expand the availability of that type of capacity over both military and commercial satellites at X-, C-, Ku- and Ka-band frequencies.

The EBEM will satisfy a government requirement for a modem that employs state-of-the art modulation and coding techniques which can support the command, control and communications requirements of today's highly mobile U.S. forces.

As the new standard for high-speed satellite communications, the EBEM will use advanced technologies such as turbo-coding and higher order modulation techniques in its design. This will allow the optimization of satellite transponder bandwidth usage while retaining backward compatibility with a wide range of legacy modems currently in use. The new modems will be able to send and receive data at speeds from 64 kbps to 155 Mbps.

The EBEM will become the Department of Defense modem standard for strategic fixed stations, Navy ships and Wideband Gapfiller System sites. The EBEM will be compliant with MIL-STD-188-165A, supporting a wide range of modulation capabilities, coding techniques, turbo codes and baseband data rates. The modem will operate over Defense Satellite Communication System, WGS and commercial payloads. Resident training is being established at the Signal Center and reviews of documentation are ongoing to verify training requirements.

The EBEM, MD-1366/U, NSN 5895-01-519-2525 (strategic) and MD-1366A/U, NSN 5895-01-519-2415 (tactical) will be designed and produced by ViaSat Inc.

For more information, contact Frank Stein by email: steinf@gordon.army.mil. DSN: 780-7903, or commercial (706) 791-7903.

Mr. Stein, TAMSCO employee, supports PM DCATS out of Fort Monmouth N.J., and works out of the TRADOC System Managers SATCOM office in Fort Gordon. He was formally the deputy TRADOC System Manager (retired from government in 1993.)

He has been working in the satellite area since 1977 and has over 50 years in communications which includes working out of Fort Monmouth starting in 1957 as an instructor followed by course chief. He moved to Fort Gordon with the Signal Center from Fort Monmouth in 1976.

Acronym QuickScan

EBEM – Enhanced Bandwidth Efficient Modem

Barr assumes duties as Regimental chief warrant officer

CW5 Andrew Barr assumed the duties as the second Regimental chief warrant officer of the Signal Regiment on Jan.15, 2004. Now retired MG Peter Cuviello appointed CW5 Pete B. Hewitt as the 1st RCWO in 1999. CW5 Barr recently completed more than four years working on the Department of the Army Staff as the Warrant Officer Personnel Policy Integrator for the Army G-1. His responsibilities while assigned to the Pentagon included management of accessions, promotions, separations, legislative and leader development issues and policies encompassing over 22,000 warrant officers in the active and reserve components of the United States Army.

CW5 Andrew Barr

The RCWO serves as the advisor to the chief of Signal and commanding general on all warrant officer matters just as the Regimental command sergeant major represents enlisted and NCO issues. The responsibilities of the RCWO are to advise the commanding general/chief of Signal on all matters pertaining to warrant officers, represent the chief of Signal at official functions as directed and assess the status of warrant officers to include state of training, professional development, morale, recruitment, retention and any other areas impacting readiness.

The RCWO serves as the Signal Center's representative to the Army's Senior Warrant Officer Advisory Council which assists in developing issues for the Training and Doctrine Leader Development Decision Network.

Acronym QuickScan

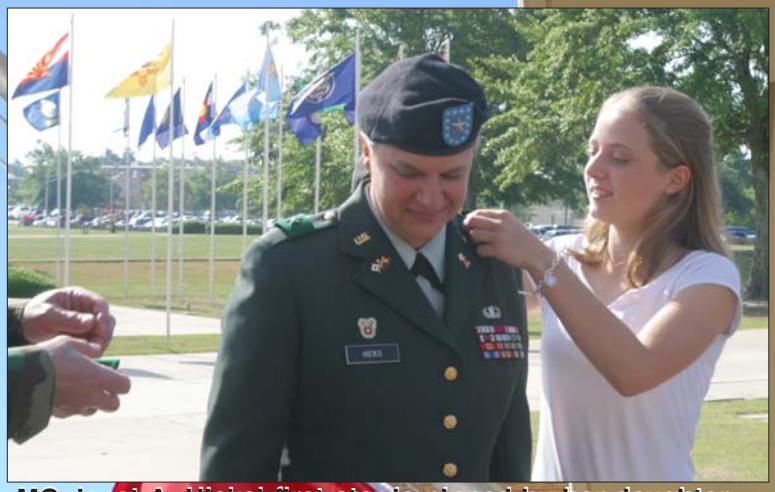
RCWO — Regimental chief warrant officer

Circuit check

News and trends of interest to the Signal Regiment

Hicks pins on second star

by PFC Armando Monroig



MG Janet A. Hicks' first star is pinned by her daughter Jennifer. GEN Kevin P. Byrnes, Training and Doctrine commander was on hand to pin the second star.

A pinning ceremony was held June 2, 2004, at the Signal Towers courtyard for MG Janet A. Hicks, Chief of Signal.

Hicks was promoted from brigadier to major general before a gathering of more than 500 family, friends and co-workers.

It seemed that just about everyone on Fort Gordon turned out for the ceremony.

Soldiers and civilians filled the chairs setup under the tents and in the seating area, while hundreds filled a standing room area.

GEN Kevin P. Byrnes, commanding general, U.S. Army Training and Doctrine Command, CSM Anthony Williams, TRADOC command sergeant major, and Augusta Mayor Bob Young were among those in attendance.

Hicks' daughter Jennifer, along with Byrnes, pinned the two stars to Hicks' Class A uniform.

As Hicks was pinned, CSM Michael Terry, Fort Gordon regimental command sergeant major, unfurled the two-star flag as the audience watched.

But before the actual pinning, Byrnes had a few words to say about Hicks.

"She has had a wonderful career thus far and there's much more to go," Byrnes said of Hicks,

BG Gregory J. Premo, deputy commandant, congratulates Hicks on her second star at a reception in Alexander Hall following the promotion ceremony.

Hicks thanks Soldiers, civilians, co-workers and friends who shared in the ceremony. "Achievements that matter in life are the ones you achieve on a team. And I am so blessed to be on this team," she said.

Training and Doctrine Command's Commanding General GEN Kevin P. Byrnes, and CSM Anthony Williams, TRADOC command sergeant major, were on hand to take part in the ceremony. "GEN Hicks – when she sets her mind to something, it happens," said Byrnes. "I can think of nothing finer to do for this general officer today than promote her to the rank of major general."

after reading her biography. "She has done a wonderful job here over the last couple of years."

Byrnes said the Signal Corps continues to head in the right direction leading in information technology and training Soldiers to keep the Army connected, in part to her great leadership and determination to get things done and to standard.

"GEN Hicks – when she sets her mind to something, it happens," said Byrnes. "I can think of nothing finer to do for this general officer today than promote her to the rank of major general."

Hicks has been the Fort Gordon commanding general for 22 months, assigned here Aug. 7, 2002, and serving in a two-star position for almost two years – finally getting the promotion Byrnes said she deserves.

(Above) Local media get a sound bite for community news of the day.

(Right) MG Hicks is surrounded by members of Fort Gordon's Protocol office who presented an homage of Hicks' time at the Signal Center and Fort Gordon to date in a collage.

"Stolen from the king of soul – *I feel good*," said Hicks mimicking one of singer James Brown's famous catch phrases, she took her place at the podium.

Hicks thanked all those in attendance for sharing in her special moment, especially her family and close friends, at times getting teary-eyed when reminiscing on those dear to her.

She thanked her mom who she said taught her about leadership and management by being a woman who could handle many tasks.

"She was a business woman and she also raised three kids and she did it standing on her head," said Hicks, "and with a smile, and supper on the table – they derived the term super-mom from my mom."

Hicks let everyone know that "the only achievements that matter in life are the ones you achieve on a team. And I am so blessed to be on this team."

She thanked everyone for what they've done and for what they continue to do for the Fort Gordon team and for contributing to the special occasion.

Following the ceremony attendees gathered at Alexander Hall to congratulate the newly-pinned major general.

Hicks said getting pinned major general "sets me on an even par with my peers."

She also added that it feels good to know she's accomplished something only a handful of woman have in the Army.

"The Army is not interested in gender. It is interested in what you can do," she said. "It is probably the best organization in the world for allowing one to grow regardless of gender or race."

PFC Monroig is on staff as print journalist with The Signal *newspaper, Public Affairs Office, Fort Gordon, Ga.*

Senior Army Signal Leaders ask Soldiers of V Corps' 22nd Signal Brigade to share in Transformation

by PFC Michael Howard

DARMSTADT, Germany — MG Janet A. Hicks stood before assembled formations of officers, NCOs and enlisted Soldiers from V Corps' 22nd Signal Brigade and listened to their comments and suggestions, exchanged ideas with them, and perhaps most importantly, listened to them.

With the Army's Signal Corps in the midst of transformation, Chief of Signal Hicks, commander of the U.S. Army Signal Center and Fort Gordon, Ga., and Signal Regimental CSM Michael A. Terry, visited the 22nd to share the future with the corps' Signal Soldiers.

"We are in a period of lots of work, and lots of change, and lots of mission. Changes are happening at the very core of our Army," said Hicks.

A primary focus of Hicks and Terry's visit was to clarify exactly what this restructuring means and explain its impact on Signal Soldiers. The general detailed the philosophies and plans of Army Chief of Staff GEN Peter Schoomaker and the shifting focus of the Army from plans for the future to today's needs.

"Under [former Army leadership], if you called the Pentagon and said, 'I want to talk about the present,' they would tell you that they'd have to get back to you on that. But if you called up and wanted to talk about the future, they would say, 'Great! How much do you need?' [Schoomaker] is committed to giving the Army what it needs right now,"

Hicks said.

More than coming to announce changes however, Hicks came to announce that the Signal Corps was ready for those changes and is open to suggestions. Because of its recent deployment to Operation Iraqi Freedom, she said, 22nd Signal has seen unprecedented activity for a signal brigade, and that makes the brigade's Soldiers especially qualified to discuss the strengths and weaknesses of the Army's signal program.

During the brigade's deployment, the normal command structure of signal units underwent fundamental changes, as an entirely new class of signal equipment – the Promina — was put into use in Operation Iraqi Freedom for the first time. "We had Soldiers reading instruction manuals as they crossed the berm [into Iraq]," said Hicks.

As a result, signal Soldiers from private to sergeant suddenly found themselves on somewhat even terrain with regard to knowing the equipment. Privates and specialists often had to step up and assume leadership positions, the general explained, giving them on-the-job training and experience that put them far ahead of signal Soldiers who did not deploy.

That combat-tested knowledge the brigade earned during its tour in Iraqi Freedom makes it a prime sounding board in this time of radical changes, said brigade CSM Ray D. Lane.

As one acknowledgement of the value of the brigade's efforts during its deployment, Hicks presented COL Jeffery G. Smith, the 22nd's commander, with the Silver Order of Mercury. The award is the Signal Corps Regimental Association's highest honor, given to those who make "conspicuous long-term significant contributions to the U.S. Army Signal Corps and the Signal Regimental Association."

Hicks also visited each of the 22nd's battalions, where she was briefed on their performance and heard the lessons each learned during deployment. She also discussed ideas, suggestions and critiques on the general effectiveness of their training and how it applied to their warfighting experiences.

In discussing the transformation of the Army's signal community, Terry encouraged Soldiers to greet the changes ahead with excitement and enthusiasm.

"You've got to be excited about this," he told the signal Soldiers. "I've talked to a number of you, and I know that some of you have got some inhibitions. Hey, if we didn't get excited about what's going on here, we'd still be riding horses in our Army today. This is not about the Signal Corps. This is not about flags. This is not about turf. This is about lethality in our Army today (and) the ability to carry the fight to the enemy and to protect America and its views about liberty and freedom, and (about) treating people with dignity."

PFC Howard is assigned to the V Corps' 22nd Signal Brigade Public Affairs Office, Darmstadt, Germany.

UPDATES

APM KICC rapidly builds Global Information Grid in Iraq, relieves two battalions of Signal Soldiers

by Stephen Larsen and Ralph Meacham

Somewhere in Iraq, there's a convoy awaiting dispatch from a command center or a supply depot, or perhaps, a Soldier awaiting medevac to Germany.

These simple actions are possible if you have the basic tools of Battle Command – the capability to send and receive e-mail messages or video images, or to make phone calls - which U.S. and coalition forces have thanks to the rapid fielding of information infrastructure improvements under the Army's Kuwait Iraq C4 (command, control, communications and computers) Commercialization project.

Since being established in June 2003, the Army's Assistant Project Manager, KICC, has rapidly moved to establish Global Information Grid-compatible information infrastructure and bring commercial C4 systems to support both expeditionary and enduring presence requirements.

Leading the communications 'fight'

The KICC project is based on the vision of leadership of the 335th Theater Signal Command, which, said its Commander, MG Lowell "Rip" Detamore, is leading the communications 'fight' as a deployed C4I enabler, providing Battle Command, requirements validation and engineering support, as well as direct coordination and prioritization of communications resources for the warfighter.

"Our commercialization efforts provide reliable networks to our Army at War and represent one of the largest projects ever undertaken by a Theater Signal Command," said Detamore, adding that the end-state objective is to reduce the tactical signal force structure while increasing C4 connectivity, data throughput and global reach. "Simultaneously, we are enhancing responsiveness and 'upgunning' our total coalition, joint and expeditionary comms capability, from Echelon-Above-Corps to the foxhole," he said.

APM KICC's efforts, said Detamore, represent a part of the his command's goal of a "single PM" for their enterprise network as the Coalition Forces Land Component Command/U.S. Army Central Command/portion of the U.S. Central Command's joint enterprise of the GIG, supporting U.S. and Coalition land forces "on the tip of the spear here in Southwest Asia."

Driving the KICC project are requirements from CFLCC/ARCENT/Third U.S. Army (3A)/CENTCOM. The original requirements document called for commercializing 169 C4 nodes in Kuwait and Iraq, needed to achieve the goal of providing commercial Defense Information System Network

services down to brigade/battalion-level operating from longer-term base camps.

"Our intent was to allow redeployment of selected tactical communications units and equipment and to provide increased communications capability in Kuwait and Iraq," said COL Mike Bianchi of the CFLCC Deputy C-6 (project coordination cell). "We have made good progress with allocated funds to directly relieve selected tactical signal units and have begun to enhance theater network and services at longer-term bases in Iraq – and we're looking forward to continuing our efforts as the Department of the Army allocates (additional) funds."

Towards that end, CFLCC C-6 has instituted a process to better synchronize its commercialization efforts by organizing into four C4 Battle Operating Systems: operations, engineering, resources, and operations and maintenance.

"These four areas are synchronized each week based on the specific sites of interest," said Bianchi. "APM KICC is represented in the Resources BOS, but is tied into our overall commercialization effort in CFLCC for all C4 BOS."

The CFLCC Deputy C-6 (Project Coordination Cell) is leading the synchronization effort.

Some of the team implementing the Kuwait Iraq C4 (command, control, communications and computers) Commercialization project (clockwise, from lower left): COL Lee Price, project manager, Defense Communications and Army Transmission Systems; Alan Church, contractor with Information Systems Support; LTC John Saenz, liaison officer with Coalition Forces Land Component Command; Pete Cryan, contractor with Lockheed Martin; LTC Joseph Schafer, assistant project manager, Kuwait Iraq C4 Commercialization; (center) Betsy Harmes of the Army Materiel Command Communications Security Logistics Activity.

APM KICC team hit the ground running

LTC Joseph Schafer, the APM KICC for the Project Manager, Defense Communications and Army Transmission Systems, said his team "hit the ground running" in Southwest Asia.

"Within 60 days of receiving acquisition approvals, we expedited delivery of C4 equipment to the theater, which was the first step towards relieving deployed signal units," said Schafer. He added that this expedited communications support is relieving approximately a brigade's worth of commercial C4 capabilities for the theater - including satellite, microwave, telephone switching and multiplexing systems.

Schafer expects to complete this phase of the project by September 2004, but points out it's already reaped benefits in relieving hundreds of Soldiers in tactical signal brigades - the equivalent of two signal battalions- so they could be redeployed for other missions.

A case in point: On Feb. 18, 2004, the bulk of the 11th Signal Brigade Thunderbirds returned home and uncased their colors in front of a large, joyful crowd of family and friends at Fort Huachuca, Ariz. - despite that the Soldiers arrived home shortly after midnight.

"These Soldiers had been serving as the local "Ma Bell" for U.S. and coalition forces in Iraq, manning telecommunications equipment," said Schafer. "That's kind of like swatting a fly with a sledgehammer. These Soldiers have unique, highly-specialized capabilities that the Army needs elsewhere."

Schafer said that concurrent with the expedited delivery of equipment, APM KICC continued the planning, engineering support for infrastructure capabilities improvements at major enduring presence locations in both Kuwait and Iraq. These efforts will put into place in Iraq a 155 megabit per second terrestrial transmission network and associated terminating multiplexing systems that will approximately double the existing intra-theater transmission capacities among major headquarter locations - at significantly reduced recurring costs compared to satellite systems currently supporting these users.

APM KICC is also managing the implementation of commercial-

based Battle Command-capable telephone systems and associated cable plants, supported by the Project Manager, Defense Communications and Army Switched Systems, to provide the "last mile" of connectivity.

"These telephone capabilities will provide an approximately 80 percent increase in phone capacity within the next 12 months," said Schafer, "with potential to triple subscriber service capacities."

Coalition network meets requirements of Transformational Communications Architecture

Schafer said that APM KICC is delivering a network for coalition forces that will meet requirements of the Transformational Communications Architecture - an overall joint communications concept that aims to provide data connectivity to all echelons of the force – in the form of the Coalition Multinational Division Network.

"The CMN is another noteworthy example of leveraging commercial C4 technical solutions to meet operational user needs," said Schafer. He said the network employs a Time Division Multiple Access/Demand Assigned Multiple Access solution that will provide coalition partner units with a robust voice and data network – permitting both legacy analog and digital services to operate seamlessly across the same network and provide end-to-end interoperability capabilities across the GIG.

"Our employment of bandwidth-on-demand technology and network management capabilities will significantly reduce recurring costs for both bandwidth and O&M (operation and maintenance) services," said Schafer, "compared to costs associated with current hub spoke technical solutions."

Schafer said that the success of APM KICC in bringing together industry and other supporting project managers - such as PM DCASS, along with the Project Manager, Warfighter Information Network - Tactical and the Project Manager, Tactical Radio Communications Systems - to provide comprehensive commercial C4 services has garnered significant interest from other users needing similar capabilities. An example is the U.S. Marine Corps, for which APM KICC is providing multiplexers, telecommunications switching systems, Deployable Ku-Band Earth Terminals and technical control facilities at various locations in Iraq.

This is possible, pointed out Schafer, because of APM KICC's large in-theater presence of more than 100 Soldiers, civilians and contractors with expertise in project management, engineering, logistics and implementation personnel, located at four facilities in Kuwait and Iraq. Among the critical players are the U.S. Army Communications-Electronics Command; the U.S. Army Information Systems Engineering Command; Computer Sciences Corporation; Galaxy Scientific Corporation; Information Systems Support; Signal Solutions; and Lockheed Martin Corporation.

"What we're bringing to the other PMs and the users is the ability to quickly leverage the KICC in-theater presence," said Schafer. "Our goal is to provide the Army, the coalition and the joint communities with a stable, cost-efficient, interoperable and sustainable C4 system that will minimize stovepipe systems in-theater and greatly lower recurring life-cycle costs."

Detamore concurred with that thought. "Our Soldiers, Marines and civilians are dedicated members of a vital team, leading the way as part of the Army transformation into coalition, joint, network-centric, interoperable, knowledge-based warfare - our goal is not just 'Information Superiority,' but 'Decision Superiority' for the Warfighter," he said.

Mr. Larsen is the Public Affairs Officer for the Program Executive Office, Enterprise Information Systems at Fort Monmouth, N.J., with more than 20 years' experience writing about Army systems. He holds a B.A. degree from the College of Staten Island of the City University of New York.

Mr. Meacham is one of five deputy program managers for KICC, Fort Huacchuca, Ariz. He worked on this article along with Neslie Morrison, also a deputy PM for Systems, Fort Huachuca, Ariz. They served as subject matter experts on APM KICCS for this article.

PM DWTS CONNECTS LOGISTICIANS OF 3ID WITH CSS VSAT

by Stephen Larsen

FORT STEWART, Ga. - When the Army's Product Manager, Defense Wide Transmission Systems conducted training and fielded Combat Service Support Very Small Aperture Terminal satellite communications systems to Soldiers of the 3rd Infantry Division at Fort Stewart on May 5, it was than more than just part of the Army G-4's initiative to "Connect the Logistician," according to several participants.

"In Iraq, it becomes a force protection issue," said MAJ Angel Nieves, the Combat Service Support Automation Management Officer of the 3ID. "We can take Soldiers off the road and minimize the time they're in harm's way. Literally, it's a lifesaver."

"This product will save lives – logistics people won't have to make extended road trips for communications," said Rick Forrest, a former sergeant major in the U.S. Marine Corps, who headed the PM DWTS fielding team. "'Connect the Logistician' is more than just a slogan, it's a lifesaver."

"This is a paradigm shift - CSS VSAT will fundamentally change the way support operations are executed in the Army," said MAJ Michael Devine of PM DWTS to the Soldiers of the 3ID as he opened the first training session. "It will give you the capability to reach back and touch information systems back home – right there where you stop. And it will reduce 'sneaker net' and make it safer," he added, referring to the practice in which Soldiers need to save logistics data on a disk and then

drive - or walk - the disk to another location – hence the term "sneaker net."

"I came out of the tactical environment to help develop solutions," said Devine, telling the group of when he had deployed to Kosovo in 1999 as a Brigade Signal Officer with 7th Corps Support Group during Task Force Hawk, and initially had no means to transmit logistics data – until he received a satellite-based communications 'flyaway' package from PM DWTS, which is part of the Project Manager, Defense Communications and Army Transmission Systems.

Soldiers got hands-on training in assembling, operating and disassembling Combat Service Support Very Small Aperture Terminal satellite communications systems when the Army's Product Manager, Defense Wide Transmission Systems fielded the equipment to the 3rd Infantry Division at Fort Stewart, Ga.

Connected to a global network

Devine told the Soldiers that the CSS VSAT system can provide Non-Classified Internet Protocol Router Network access via satellite to CSS users almost anywhere in the world through a global network, connecting remote users to one of several hub stations around the world.

After Devine addressed the group, Forrest's fielding team conducted classroom instruction and then hands-on training, during which the 3ID Soldiers experienced first-hand how easy it is to assemble, operate, and then disassemble the CSS VSAT system – which is packed in only five transit cases.

The CSS VSAT system includes built-in Global Positioning System receivers, a motorized satellite antenna and a laptop computer which runs the CSS VSAT software program – enabling individuals with little or no satellite communications training to set up a satellite communications link and acquire NIPRnet access almost anywhere in the world. The system software determines the current location of the antenna, determines the satellite to be used, configures the modem and automatically points the antenna, via GPS.

The system can be connected to either a local area network, via a hub, router or switch, or to a wide area network, via a wireless interface, such as the Combat Service Support Automated Information Systems Interface – another PM DWTS product – which allows the operator at the terminal to be up to four miles away from the antenna, greatly increasing survivability from incoming rounds.

The future is now

"We're not reinventing the wheel, we're repackaging COTS (commercial-off-the-shelf equipment), said Devine, adding that this first fielding to the 3ID was with prototype terminals, to be followed by fielding of production terminals starting in August of this year, and to be completed by September – "supporting the transformation of the 3ID," he said.

Nieves was impressed by how spiral, rapid development – with improvements to follow – was giving his Soldiers much-needed communications capability – now.

"In less than a year, we have the capability – it's not a pipe dream somewhere, it's in the hands of Soldiers," said Nieves.

The Army previously rapidly deployed a limited number of CSS VSAT systems during Operation Iraqi Freedom, where the systems got high marks, according to BG Charles Fletcher Jr., the Army's Assistant Deputy Chief of Staff for Logistics (G-4), in his remarks at Industry Day of the Program Executive Office, Enterprise Information Systems, in Arlington Va. on March 17.

"VSAT was a lifesaver," said Fletcher. "And CAISI, we didn't realize how critical it would be until we got it set up and found we were no longer tied to all this wire we were stringing. The 4th ID (Infantry Division) used it extensively; the 101st (Airborne Division) used it extensively. That's why we're pushing real hard now to make it the standard Army system. The centerpieces of our 'Connect the Logistician' (initiative) are VSAT, CAISI and satellite communications in a lighter version – the comms backbone to really empower logistics."

"This is going to become our division standard for transmission of logistical data," said Nieves.

"This is 'tip of the spear' technology, the first of its kind to connect to the logistician," said Forrest.

Bill Flynn, a logistics assistance representative with the U.S. Army Communications-Electronics Command, summed it up as he observed the training and hand-off of the CSS VSAT system to the 3ID.

"This is historic," said Flynn. "Every after-action report from Iraq cried out for this, noted a lack of communications for logistics. This solves it – not just a little bit – a lot."

Mr. Larsen is a public affairs officer with Program Executive Office, Enterprise Information Systems at Fort Monmouth, N.J.

PM DWTS TEAMS WITH NON-PROFIT ORGANIZATION TO HELP SOLDIERS IN IRAQ CONTACT HOME

by Stephen Larsen

Country star Rodney Atkins to help launch network

One of the toughest things about being a deployed Soldier is being away from your family. Many of the Soldiers in Iraq are young parents and won't see their spouses or children for a year or more. But thanks to the donation of millions of dollars of telecommunications equipment and services to the Army by the Freedom Calls Foundation, these Soldiers will soon be able to more easily send e-mail to or call their loved ones at home.

Since August 2003, the Freedom Calls Foundation has collected some $10 million worth of donations for equipment and services to provide free Internet, voice over Internet Protocol telephone and videoteleconference services for up to 10,000 troops. The Army officially accepted the donation on April 6, 2004.

"We expect to be configuring and testing the network for the balance of (this) week," said John Harlow, executive director of Freedom Calls. "Our facility has engendered quite a bit of interest from the troops in the camp."

Ed Bukstel, operations director of Freedom Calls, said country music star Rodney Atkins has pledged to help to launch the Freedom Calls network with a live concert that will be video-teleconferenced to Iraq from a military base.

"I can't imagine how happy the families of these Soldiers will be when this program is fully operational," said Atkins. "I think it's a wonderful use of this exciting communication technology."

Thanks to the Freedom Calls network, Soldiers deployed in Iraq will be able to stay in touch with loved ones via free Internet, voice over Internet Protocol telephone and video teleconference services. The Army got a taste of the value of such services on June 6, 2003, when a VTC link (shown above) allowed parents deployed in Iraq to "virtually" attend their children's graduation from Vicenza High School, a DoD school in Vicenza, Italy.

Started with an e-mail

The initiative started in August, 2003, when Bukstel, the executive vice president of SkyFrames Inc., a satellite telecommunications company, of Costa Mesa, Calif., received an e-mail "out of the blue," from a sergeant in Iraq.

"She (the sergeant) wrote to me that communications available for Soldiers in her unit to contact home were very poor and that it would be helpful to troop morale if they could get Internet access and e-mail so they could stay in touch with loved ones," said Bukstel. "She asked if I had any ideas that might help."

SkyFrames issued a press release to ask for donations to help out this unit in Iraq. Harlow, a Wall Street lawyer, read the release, contacted Bukstel, and together they established the Freedom Calls Foundation, a non-profit entity incorporated in the state of New York and registered with the Charities Bureau of the state of New York Department of Law.

Among the larger donors, Bukstel said, Hewlett-Packard donated 1,000 laptop computers, 100 printers and scanners; Logitech donated 500 web cameras and microphones; Loral Space & Communications donated Very-Small Aperture Terminal satellite dishes, hub connections and a full year subscription of free bandwidth; Motorola donated a wireless broadband platform that will allow troops in a 15-mile radius to tie into the network; and FedEx donated "in excess of" $300,000 of cargo space to get the gear to Iraq. Bukstel said that an American engineer is working with an Iraqi telecom company to provide installation and maintenance services.

The waiting is the hardest part

Among those helping Freedom Calls navigate through Army channels for approval of the donation have been the Army's Product Manager, Defense Wide Transmission Systems - first, LTC Michael Kwak and then his successor, LTC Earl Noble - and Janice Starek, a

project leader for PM DWTS.

Starek, who was an intern at a Military Affiliate Radio Station during the first Gulf War, said Kwak, Noble and she were determined to make this work. "We didn't let it drop, we thought it was a good thing, said Starek. "After all, these Soldiers are putting their lives on the line."

Some of the issues to be ironed out, Starek said, have been who will be responsible for the donated equipment when it's in Iraq, and what will happen to it after the troops come home? Starek said the equipment will be signed for by local Morale, Welfare and Recreation personnel in Iraq and that at the completion of the mission, PM DWTS will be responsible for determining disposition.

"The equipment will either be transferred to other MWR activities, placed on long-term storage or disposed of, if the equipment is obsolete at that point," said Starek.

But in the end, the waiting was worth it. Just ask a Soldier.

"Calling home is the biggest morale booster there is," said SPC Johanna Adams, a personnel specialist with the 4th Infantry Division in Iraq.

PM DWTS got a taste of how sweet it can be to help Soldiers in Iraq stay in touch with loved ones on June 6, 2003, when a team including the Armed Forces Network – Europe, the 509th Signal Battalion, the Army Field Support Command, Italia Telecom, TAMSCO and a Network Operations Center located at Fort Monmouth worked together to set up a VTC between Vicenza High School, a DoD school in Vicenza, Italy and students' parents, deployed in Iraq - allowing the parents to "virtually" be there for the once-in-a-lifetime experience of their child's high school graduation. After the ceremony, students and parents spoke to each other through the VTC link. As you can imagine, through the VTC link there were personal face-to-face congratulations and tearful reunions. A commander in Iraq wrote that the VTC "had to be the biggest morale booster I've witnessed in 25 years of military service. The VTC brought a once-in-a-lifetime event to the battlefield of Iraq. The joy I witnessed on both ends of the video monitor will be in war stories for many generations to come."

"That's it – that hits the nail right on the head," said Bukstel. "That's why we're doing this."

Bukstel said that he heard of a Soldier whose wife had their baby two weeks after the Soldier was deployed to Iraq.

"That's pretty tough," said Bukstel. "I have two little baby girls, three and four years old. I don't know what I'd do if I couldn't see them for a year."

Bukstel said that he plans to go to Iraq after the first installation is operational.

"It's going to bring tears to my eyes when this happens," he said. "One guy told me when he was in Vietnam he didn't talk to his family for over a year. Well that was years ago - now we have technology so that doesn't have to happen."

Mr. Larsen is a public affairs officer with Program Executive Office, Enterprise Information Systems at Fort Monmouth, N.J.

DOD: Contractors here to stay Military, IT vendors expect Iraqi-like job hazards in future wars

Reprinted with permission by Federal Computer Week.

by Frank Tiboni

Do not look for any dramatic change in the deployment of civilian contractors in war zones. Military and industry officials acknowledge that the work is dangerous but necessary — a point driven home by an attack in late March in which four employees of Blackwater Security Consulting were killed in Fallujah, Iraq.

The Defense Department's transformation initiative emphasizes having uniformed personnel fight battles while contractors provide support, including security services for government officials and communications services for troops on the battlefield.

"We have IT (information technology) contractors here doing a stupendous job," said Army COL Joseph T. Catudal, director of communications and Information Technology in the Communications Support Office. He oversees communications and IT for the Coalition Provisional Authority in Baghdad.

More than 500 IT contractors support the coalition in Iraq. Most provide satellite communications. Others operate voice, video and data networks or maintain desktop and notebook computers. One vendor is working with the Army to incorporate handheld devices into operations.

Army officials who manage IT programs and efforts said they desperately need support from contractors. "Contractors play a crucial role [because] the Army downsized during the 1990s," said Lee Harvey, deputy program executive officer in the Program Executive Office-Enterprise Information Systems at Fort Belvoir, Va.

Technical and Management Services Corp., in Calverton, Md., provides most of the IT contractors working with PEO-EIS. Company officials recognize the risk, but they know how to support the military in combat after years of experience, said spokeswoman Anne Rugg.

The 715-person firm, owned by Engineered Support Systems Inc. of St. Louis, provided communications support to the Army during military campaigns in Haiti and the Balkans in the 1990s. The wars produced the Multi-Media Communications System, a patented TAMSCO product that delivers voice, video and data services for military and civilian employees deployed overseas, Rugg said.

"It's no piece of cake," she said. "The Army is our customer. But there are business opportunities in Iraq."

TAMSCO installs and maintains voice, video and data systems for the CPA. It provides those services using commercial satellite systems, Rugg said.

The company's presence in Iraq has generated more business. Parsons Delaware Inc., part of Parsons Corp. and a U.S. contracting company working on electricity, public works and water projects there, hired TAMSCO for communications services, she said.

An IT industry official also said lucrative business opportunities exist in Iraq.

"If you are unemployed or underemployed in the United States, there are good work and pay opportunities in Iraq," said Joe Draham, vice president of government relations and congressional affairs at GTSI Corp. He worked for three months as a senior adviser to the CPA's chief operating officer.

Contractors including Blackwater, TAMSCO and Parsons post job ads in national newspapers and get many responses. Draham said he spoke to an individual who was hired to work in Iraq after responding to an advertisement.

"The person was very satisfied," Draham said. "But you'd have to look at the lives of the people to know why they took the jobs when you see the increased level of violence there."

Contractors inside the Green Zone, a reasonably protected area in Baghdad and the site of CPA headquarters, work in a more secure environment than those who will participate in reconstruction. Companies bidding work in Iraq add a 40 percent security fee to final offers to pay for employees' protection, he said.

Military and industry officials would not discuss IT salaries. But the company that provides security for L. Paul Bremer, U.S. administrator in Iraq who oversees the CPA, charged $500,000 for six months, according to an industry official familiar with the situation.

Iraq contracts offer good income with the potential for future revenue, said Bob Guerra of the Washington, D.C., IT consulting firm Guerra, Kiviat, Flyzik and Associates Inc.

"If you are over there now getting up the infrastructure and building it, you are getting to know the environment, culture and the business," Guerra said. "Whatever the nation of Iraq turns out to be, you'll know people there. It's paid business development."

The CPA CSO employs the most IT contractors — about 170 — followed by the Army's PEO-EIS with 160 and the service's Program Executive Office-Command, Control, Communications-Tactical with 146.

The companies that provide the most IT contractors to the CPA include Raytheon Co., Science Applications International Corp. and TAMSCO, said Catudal, who served as director of operations in the Army's Office of the Chief Information Officr/G-6 before working for the CPA in Iraq. He declined to comment on the number of workers from each company because of security concerns.

Most IT contractors working for PEO-EIS in Iraq install, operate and maintain satellite communications terminals.

"There's nothing else to use," said Harvey, deputy to Kevin Carroll, who is head of PEO-EIS.

Coalition forces destroyed voice, video and data networks during last year's invasion of Iraq. Satellite communications contractors give troops optimal and continuous communications across the country's vast desert and rugged mountain terrain, he said.

The official who oversees 100 of PEO-EIS' 160 IT contractors in Iraq agreed with Harvey about the organization's dependence on contractors there.

"We just cannot do it without them," said COL Lee Price, project manager for Defense Communications and Army Transmission Systems at Fort Monmouth, N.J.

Besides Technical and Management Services, other companies providing significant numbers of IT workers to PEO-EIS include Computer Sciences Corp., Lockheed Martin Corp., Information Systems Support Inc. and Titan Corp., Price said. She also would not comment on the number of workers from each company because of security concerns.

Officials at PEO-C3T, the Army organization at Fort Monmouth that manages battlefield communications systems, also said they could not do their jobs in Iraq without IT contractors. "They all perform exceptionally well," said LTC Gale Harrington, product manager for common hardware systems.

Most install equipment and support hardware and software. Four contractors from General Dynamics Corp. maintain desktop, notebook and computer servers under the Common Hardware/Software II contract, Harrington said.

General Dynamics, Lockheed, Raytheon and Northrop Grumman Corp. provide the most IT contractors to PEO-C3T. "Contractor support keeps the tactical networks up and running through technical support, software troubleshooting and equipment repair," said PEO-C3T spokesman Tim Rider. "Some support technicians are embedded with combat units to provide on-site support thereby minimizing outages of key command and control systems."

Mr. Tiboni is a writer for Federal Compter Week.

FOCUS TF LINKING JOINT VIRTUAL TRAINING TO 'BOX'

by Gary Sheftick

Editor's note: This article is part of a series on the 17 Army focus areas. This one focuses on the "Combat Training Centers/Battle Command Training Program."

WASHINGTON — Transformation at the Army's combat training centers has accelerated to support the Global War on Terror while driving a cultural shift toward a campaign-quality Army with joint and expeditionary capabilities.

That is the message from BG Timothy D. Livsey, the deputy commanding general for training at the Combined Arms Center, Fort Leavenworth, Kan. Livsey also

heads up the Army's CTC/BCTP Focus Area Task Force, which developed the implementation plan to change the Army's capstone training program.

Lessons learned in Iraq and Afghanistan are being injected into CTC training scenarios in "almost near real time," said Livsey. "If an IED (improvised explosive device) goes off over there or an ambush happens, we're feeding that to trainers and to the units getting ready to deploy."

This streamlined delivery of lessons learned, Livsey said, has an impact on all training rotations at the Army's CTCs. The maneuver box or "dirt" CTCs include the National Training Center at Fort Irwin, Calif.; the Joint Readiness Training Center at Fort Polk, La.; and the Combat Maneuver Training Center at Hohenfels, Germany. These focus at the tactical maneuver brigade level. The Battle Command Training Program is also part of the CTC program, and provides simulation-assisted command post exercises for brigade and higher-level organizations.

The CTC training is full spectrum, Livsey said, meaning leaders and Soldiers train not only on offensive and defensive warfighting, but also stability operations — often concurrently.

The Army is also linking battles on the ground at its three maneuver CTCs with simulation-supported training at Fort Leavenworth, the Joint Warfighting Center in Suffolk, Va., and other simulation centers. This distributive training network was enabled by the recently established DoD Joint National Training Capability, or JNTC, Livsey said. He said this "realistic live-virtual-constructive training environment" will better prepare deploying units to operate as part of a joint, interagency, and multinational force as they face "unpredictable and highly adaptive enemies."

The CTC/BCTP Focus Area Task Force was charged by Army Chief of Staff GEN Peter Schoomaker to "Rescope the CTC program to train in a joint context."

Livsey said the task force includes representatives from all major commands, and ranks range from generals to junior observer-controllers at dirt CTCs. It also includes retirees who have participated in BCTP exercises, troops who recently returned from Iraq, and many Soldiers who submitted ideas through a collaborative Web site.

"The Web site was an enabler that saved time and kept us from locking people in a room for five weeks and throwing pizzas under the door," according to Livsey.

"We work very closely with JFCOM [Joint Forces Command] in creating architectures that are joint," Livsey said. For instance, during an NTC rotation, about 5,400 blue force soldiers pop up on a common operational picture screen at JFCOM headquarters in Suffolk.

"If you look at some of the databases we build for both constructive and virtual training, you're going to see many similarities," Livsey said. "We're continuing to mature and advance, and the catalyst is the JNTC program," emphasizing that the Joint National Training Capability is really a global capability.

As the CTC/BCTP Focus Area Task Force developed its implementation plan toward training in a joint context, Livsey said it was also influenced by other focus areas - specifically, Task Force Modularity.

The Combined Arms Center-Training is now developing training models for modular units and defining the specific effects that units must experience at the CTCs to understand the joint context in which they will be expected to fight. BG stated that a new Combined Arms Center for Training white paper on training in a joint context recognizes that other services need to be involved in both maneuver CTC and BCTP rotations, along with interagency and multinational participation. For example, the paper states that in the future, joint fires at the centers may be delivered by air, land, naval, special operations forces and even space assets, instead of primarily Air Force assets as is the case now.

"The synergies we get are very positive," according to Livsey. He said that the synergy between simulations and live training in the CTCs will be used to train the Army's new units of action and units of employment as divisions restructure upon returning from Iraq and Afghanistan.

"We're working now on an expansion of the CTCs' responsibilities to help units reset faster, and get ready for the next deployment. Training in a multi-echelon manner is more important than ever."

Up until now, the Battle Command Training Program has focused primarily on corps and division staffs (except for National Guard units) and the dirt CTCs have focused on brigade combat teams. "We're actually collating the formerly separate levels of training responsibility - both BCTP and the dirt CTCs will have a piece of the training of the units of action," Livsey said.

Another example of the cooperation between the three dirt CTCs and BCTP would be training a division staff through a BCTP Warfighter exercise at Fort Leavenworth while at the same time one of its UAs is rotating through the National Training Center, Livsey said. Action on the ground at NTC would be integrated into and correlated with the simulation-supported training — and vice versa, the BCTP forces would appear on the Army Battle Command System's computer screens at NTC.

Because we'll be a "plug and play" modular force in the future, commanders will have to adapt to working with unfamiliar units on short notice, Livsey said. For example, while training the unit of employment or UEx at Fort Stewart, Ga., an exercise could pull in units of action from other locations, such as Fort Campbell, Ky., or Fort Drum, N.Y.

Livsey would actually like to train each UA's command and staff element through a simulation-supported BCTP CPX prior to a "dirt" rotation, which will train the

entire unit. Resources will be the determining factor though, he said.

"There are no bad training ideas out there, but there's a finite amount of dollars," Livsey said. His staff is currently trying to procure resources for the CTCs six years out.

Livsey said commands in the future must be capable of conducting "simultaneous, full-spectrum operations." For instance, one battalion in the brigade could be engaged in a full-intensity fight; another unit in the same brigade could be keeping lines of supply open; still another could be doing humanitarian support.

"In other words, you've got to be able to do it all," Livsey said, adding that's what must be replicated in training. He said units must leave CTC with the ability to face the full spectrum, especially to defeat an enemy in a major combat operation.

Mr. Sheftick, chief of the News Operations Branch (Office of the Chief of Public Affairs), edits the Army News Service and has oversight over the Army's newspaper program, including regional workshops and Keith L. Ware journalism awards. He began his career as a beat reporter for the Kittanning Leader-Times and went on to serve in every branch of public affairs.

He worked community relations at Fort Sill, Okla.; media relations at First U.S. Army and command information at the Military District of Washington. In his current position, he has worked diligently to provide editors the latest news about Army programs and operations through ARNEWS.

Schofield Soldiers provide connectivity to PRTs

by SPC Francis Horton

BAGRAM AIR FIELD, Afghanistan- Soldiers from Schofield Barracks' 125th Signal Battalion are training to become an important part of the Provincial Reconstruction Team mission in Afghanistan.

The Soldiers are learning how to use commercial satellites to improve communications between Bagram Air Field and the PRTs.

The satellites will provide digital beyond-line-of-sight capabilities, which include commercial Internet, secure Internet and defense switched network lines, said Jeremy Brady, a civilian trainer for Tactical Command, Control, Communications and Computers.

"The Soldiers are trained on the installation, operation and maintenance of the satellites," he said.

There are 13 PRTs throughout Afghanistan, mostly set up in rural areas with no communication infrastructure. Communication abilities have been limited to sending single channel data and Iridium satellite phone communication.

With the addition of the satellite dishes, communication and intelligence can be sent and received much quicker, easier and without disruption, Brady said.

The ground satellite dishes send and receive encrypted information from an orbiting satellite. It will also give the Soldiers stationed at the PRTs better Internet and phone access.

PVT 2 Joshua Allen, a member of the 125th Signal Battalion, is one of the Soldiers learning the equipment. He is training with SSG Patrick Adams, also of the 125th Signal Battalion, to set up in a southern Afghan village.

Before he came to Afghanistan, Allen's knowledge in this area of communications was limited, but now he has the ability to find orbiting satellites with a compass and lock in the satellite dish accordingly.

"The (orbiting) satellites are always in the same place, we just shoot an azimuth to find it," he said. Once found, the ground satellites are positioned and the directions are fine tuned.

These satellite dishes use the latest technology, Brady said.

"The dishes have the ability to give back bandwidth they don't use," Brady said. This means instead of wasting unused power as most broadband lines, it recycles and reuses it.

This system was first tested during Operation Iraqi Freedom, and proved to be the best system for the job.

"The (testing) Soldiers called it the MVP of the deployment," Brady said.

As Brady and his team continue to train the Soldiers, he holds high hopes for both the equipment and their operators.

"The system is cheap and easy, and any Soldier can do this," he said. "It's been four days and they're almost ready."

The training Soldiers are pleased with the results and what the equipment means for them and their fellow Soldiers.

"I like the fact that I'm helping people who are helping the locals," Allen said. "We are going to help them talk to their families back home."

SPC Francis Horton writes for the CJTF-76 Public Affairs Office, 25th Infantry Division (Light) & U.S. Army Hawaii.

Working Like a Cable Dawg

by 2LT Kenneth R. Bulthuis

CAMP NEW YORK, KUWAIT – When Camp New York reopened its doors to Soldiers supporting Operation Iraqi Freedom in early January, servicemembers had no mode of communication.

The mission tasked to the cable platoon of Company A, 67th Signal Battalion from Fort Gordon, Ga., with the support of the 69th Cable Company from Fort Huachuca, Ariz., was to install all the cable and fiber optics necessary for communications on Camp New York, to support the staging area.

An average day for members of the cable platoon here is anything but typical when compared to past training missions. The most significant changes is the amount of new commercial equipment they have had to learn how to use, and perhaps

(Above) SPC Ken Ellis, from San Antonio, TX, prepares to roll from Camp New York in his LMTV.

(Left) PFC Veronica Cruz, from Waipahu, HI, Cable and wire installer/ maintainer splices category-5 computer cable with help from PFC Ted Hurst, from Augusta, Ga.

more importantly, the huge emphasis on customer service.

"The majority of the day is dedicated to customer service. To meet customer needs my soldiers have processed over 300 work orders from the units they support," said SSG John Martin, cable platoon's platoon sergeant.

The work orders require them to do jobs ranging from terminating fiber optic and computer cables to troubleshooting nearly any piece of equipment that has electrons flowing through it on Camp New York.

While it may seem complicated, the job was easy for the Soldiers because of their previous training.

"Being properly trained and proficient in how to do our primary mission of installing and troubleshooting communication lines and cables, made it a lot easier to adapt and learn how to interface with the unfamiliar commercial equipment we're now using at a Camp New York," said SPC Ken Ellis, cable platoon team chief.

Also a cable platoon section sergeant, SGT Ronnette Rodgers, said it didn't matter what mission the Soldiers were tasked with, because they would get it done. "What mission we have doesn't really matter to the soldiers. We're going to get it done no matter what it takes that's just what we do," she said.

To meet mission requirements, and work order requests there more than four miles of fiber optic cable has been installed. The cable platoon lay over 60,000 feet of phone lines and 6,000 feet of computer cable, giving support to over 80 tactical phones and connecting all of Camp New York's computers for Internet use.

Though the hours may be hard – Soldiers of Company A is taking it with a grain of salt – the long hours help keep their minds of other things.

SPC Leilani Vaiau, for example, thinks the long hours help pass the time here, she said.

"I just hope they appreciate the effort we've put forth."

"It's all about customer service; we need to accomplish our mission so that the units can communicate with each other, and hopefully the soldiers will be able to stay in touch with their loved ones back home," said PFC Veronica Cruz,.

And with being able to stay in touch with loved ones back home, other Soldiers, perhaps much like members of Company A, will be able to do any mission the Army requires of them.

2LT Bulthuis is the cable platoon leader for Camp New York, Kuwait.

AN/TYC-24 Tactical Message System tactical arm of DMS

by CPT Consuello Hodges

Fort Gordon, Ga. - Soldiers from the 56th Signal Battalion, 63rd Signal Battalion, and 67th Signal Battalion at Fort Gordon, Ga., had the opportunity to show their stuff as they trained, commissioned and revalidated the AN/TYC-24 Tactical Message System for secure messaging, April 12 - May 7 at Dixon Hall and the 93rd Signal Brigade's Theater Network Operations Security Control Center.

"TMS is the tactical arm of the Defense Message System," explained CPT Consuello Hodges, brigade network manager and TMS network planner, 93rd Signal Brigade. This thing is Army wide, and having the 93rd's Soldiers here demonstrating the system really makes the hard work spent in planning at Fort Hood, Texas; Fort Huachuca, Ariz., and Fort

Monmouth, N.J., well worth it.

"The idea here is to extend the same DMS messaging service used in garrison to deployed units," said Hodges. "TMS provides that seamless integration. It provides a local area network on wheels in a tactical environment. The compact TMS hardware, which includes three laptop computers, a router (all operated from transit cases), and a 2-kilowatt generator, is transportable in a single High-Mobility Multipurpose Wheeled Vehicle. That replaces the five-ton, truck-mounted AN/TYC-39 Automatic Digital Network message switch."

"The Exchange server, which is part of the TMS suites, allows units to have both secure and nonsecure messaging in one system," said Robert Schreurs, TMS functional area expert and instructor, Titan Corporation, Information Assurance Security Engineering Directorate/Titan Defense Message System Team, U.S. Army Information Systems Engineering Command, Fort Huachuca, Ariz. "Having the training and revalidation at South Theater (Network) Operational Center gave us a chance to show the system in action to the people who will be implementing the software backbone of TMS into their organization. The response was fantastic," Schreurs said.

Exchange Server represents a leap in technology for the DMS program. Less than 45 minutes elapsed, from the Soldiers working out the administrative issues to having the TMS system up and running. We've got this down to a science. It all went together really smooth, as planned, said class honor graduate SSG Jason Bonner, 63rd Signal Battalion information assurance security officer.

It was a very demanding schedule to train 13 new personnel and revalidate five TMS suites for the 93rd Signal Brigade in the time allotted. But due to focused and motivated soldiers and support personnel within this command, it was successful, said William Hunt, Titan team leader, Information Assurance Security Engineering Directorate/Titan Defense Message System Team, USAISEC, Fort Huachuca, Ariz. And as secure DMS tactical organizational messaging is being deployed to the warfighter, the 93rd's activity will be able to support the current U.S. Army missions of today with a foundation for future initiatives.

Robert Schreurs (center), TMS functional area expert and instructor, Titan Corporation, Information Assurance Engineering Directorate/Titan Defense Message System Team, U.S. Army Information Systems Engineering Command, Fort Huchuca, Ariz., teaches 93rd Signal Brigade Soldiers the AN/TYC-24 Tactical Message System at the Theater Network Operations Security Control Center. Schreurs led the brigade's fielding, training, commissioning, and revalidating of the TMS at the 93rd, April 12 - May 7.

CPT Hodges is commander, C Company 3/399th Battalion, 7th TSB, 100th DIV (IT) located at Fort Campbell, Ky.

He is responsible for four Standard Teaching Locations and the training of the STL coordinators, providing support to 2/100BN(MP), 6/100(TC), 7th BDE, and 100th DIV TASS units. He was mobilized with the 93rd Signal Brigade as a Systems Engineer during Operation Noble Eagle and later requested to be demobilized to accept an AGR position within the same command.

After completing the AGR program, Hodges reported back to Fort Gordon as the brigade network manager and was selected by his command to attend the Army's nine-month 53A Information Systems Officers Course, at Fort Gordon's, School of Information Technology.

He developed skills to manage computer systems and provide automation expertise at all levels of command. He has served as advisor to the commander and staff on automation policies and technical, matters, economic analysis and established procedures for effective use of computer resources. CPT Hodges is a 1994 graduate of the Carson-Newman College, Jefferson City, Tenn.

He is currently working on his masters in information systems.

XVIII Airborne Corps jumps ahead

by CPTs Kevin Garlock and Kevin McCullagh

In January, the 35th Signal Brigade of Fort Bragg, N.C., became the first unit of the XVIII Airborne Corps to receive the latest upgrade to the Tactical High Speed Data Network and Tactical Radio Communications System Programs. These

programs upgraded both the switching and transmission shelters to operate at an 8Mb throughput.

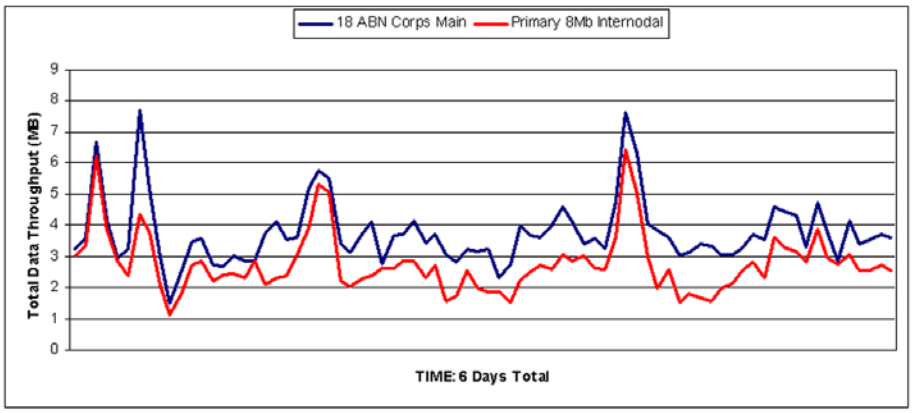
The project was dubbed a "mini-fielding" since only six large switches, four small switches and ten transmission shelters were upgraded. The fielding manager worked with the corps to provide a small yet effective package to assess the capabilities that the upgrade would provide during the Embedded Corps Warfighter Exercise. The 8Mb backbone was expected to provide a noticeable advancement in capacity over the area network backbone.

After testing during the "mini-fielding," it became clear that the 8Mb THSDN/High Capacity Line-of-Sight radios upgrade is a needed addition for the mobile subscriber equipment network to meet the warfighter's growing needs. During the exercise, the 35th Signal Brigade implemented a mixed 8Mb THSDN and legacy THSDN network to support the XVIII Airborne Corps Main, Rear and most of the major subordinate commands. Throughout the exercise, all systems performed exceptionally well and exceeded all expectations.

One of the main goals of the evaluation was to determine the total bandwidth use for the Corps Main. The corps averaged a transmission rate of 4.5Mbs across the tactical network. The 8Mb THSDN was critical in passing this traffic. The figure below shows how the major tactical link for the Corps Main carried almost all their data traffic. A requirement that traditionally is filled by several LOS and satellite internodal links can now be supported by two redundant 8Mb HCLOS/THSDN links. The trend across the network was almost all Internet Protocol traffic traversing an 8Mb HCLOS/THSDN link. This created 50 percent data use and almost no use of the legacy links, unless it was the only path available.

It is also essential to get the increased data capability to extension nodes. Current legacy THSDN small extention nodes have a maximum data capability of 512Kbs. This is not enough to meet the continual increased dependency on data and IP based systems such as Army Battle Command Systems, Voice over Internet Protocol and collaborative tools. Units supported by SENs require additional data throughput to accomplish their missions. During the exercise, all legacy SENs were either maxed with their bandwidth use or were not used because there was a better path over which the data could flow. The 8Mb HCLOS/THSDN SENs performed well and added a new dimension to their use. The SEN can now be used as an alternate high-speed path for data to traverse, creating additional data redundancy and backbone. With a move toward converged networks with voice traversing IP, the requirement for an increased data capability in the SEN greatly increases.

Soldiers from the 51st Signal Battalion install a HCLOS antenna mast.



This upgrade was not only a first for the brigade, but also for one of the contractors. This was the first time that Ultra Electronics from Montreal, Québec, has upgraded and fielded a unit at the installation. Prior to this fielding, Ultra upgraded the transmission shelters at Tobyhanna Army Depot, Pa. Ultra took the "brand new" shelters to the units and conducted a one-for-one exchange of the equipment. The process was more streamlined and provided the units with new shelters; however, it was an expensive process. Fortunately, one battalion was deployed and this left a large motorpool in which Ultra and the brigade could conduct the upgrade.

General Dynamics, the switching contractor, viewed this upgrade much like the original fielding of

THSDN years before. Many of the same workers conducted the upgrade then – and reminisced on being back at Bragg. The contractors expressed pleasure in working with the soldiers of the brigade for a second time. General Dynamics used its Regional Support Center for the upgrade and for the new equipment training.

The corps will see other advancements in some of its divisions this year. Over the next months, the remaining elements of the 35th Signal Brigade will be upgraded to the 8MB systems. The brigade and its divisions are on the next step to the future of area network support to the warfighter.

CPT Garlock is currently serving as the 35th Signal Brigade S3 engineering officer.

CPT McCullagh is currently serving as the 35th Signal Brigade Force Modernization officer.

The FM RETRANS an under used resource

by MSG Craig Williams

Frequency modulation communications is the main form of communication platform the Army uses today. This platform allows real-time information to be sent from squad leader level on the battlefield to battalion, brigade or higher.

The FM planning range for the Army is 36 kilometers maximum. The Army's FM communication is based on the RT-1523F. This FM radio is better known as the Advanced SINCGAR (Single-Channel Ground to Air Radio) Improvement Program or ASIP. The RT-1523F using a FM RETRANS can increase the battlefield FM communications up to 72 kilometers (optimally) using one RETRANS. Several RETRANS can be used in one FM network to increase the FM communications distance even further.

While in support of Operation Iraqi Freedom, my unit, the 1st Battalion (Airborne), 508th Infantry, had a major decision to make based on distance, mission and terrain. My unit jumped into Iraq from the north. We had to push south to suppress the enemy from retreating north from the coalition forces advances north towards Baghdad. The northern terrain of Iraq is mountainous.

To provide FM coverage to the convoys while rolling southward, the battalion RETRANS team had to do a map reconnaissance for primary and alternate RETRANS sites. Most units use a RETRANS NET to retransmit the Battalion Command NET. Normally it works well, but sometimes units get confused with this idea having to switch back and forth on different NET identifications. (Other events overshadow the thoughts of having to switch NET identification.)

With the ASIP radio, RT-1523F, the radio has the ability to RETRANS the same net on the same NET ID. This function is great. This same net ID RETRANS function alleviates NET ID confusion and works well. What this does is allow the two radios of an AN/VRC-92 to function separately. One radio only transmits while the other radio only receives. So far in Iraq, we have RETRANSED FM nets over 98 kilometers. Thus far, the maximum FM communication distance being 120 kilometers. The RETRANS system is an FM communications platform that is under used by units and greatly increases the overall ability of units to communicate and better perform their missions.

You can find information on how to do the same NET ID RETRANS in the SINCGARS *Technical Manual 11-5820-890-8*; pages 4-31, TM dated December 1998.

MSG Williams served with the 1-508th Infantry Battalion based out of Vicenza, Italy, as a part of the Northern Front in Iraq. They pushed south to the final destination of Kirkuk, Iraq.

Warthog proves threat emitter overhauls

by Anthony Ricchiazzi

TOBYHANNA ARMY DEPOT, Pa.—The U.S. Air Force is helping technicians here to more efficiently repair and test Air Force threat emitters.

Personnel in the Range Threat Systems Division recently performed operational testing on three range threat systems, the AN/MSQ-T43 Modular Threat Emitter, the AN/VPQ-1 Tactical Radar Threat Generator and the AN/MST-T1A Multiple Threat Emitter System. The division is part of Tobyhanna's Avionics-Intelligence Electronics Warfare Directorate.

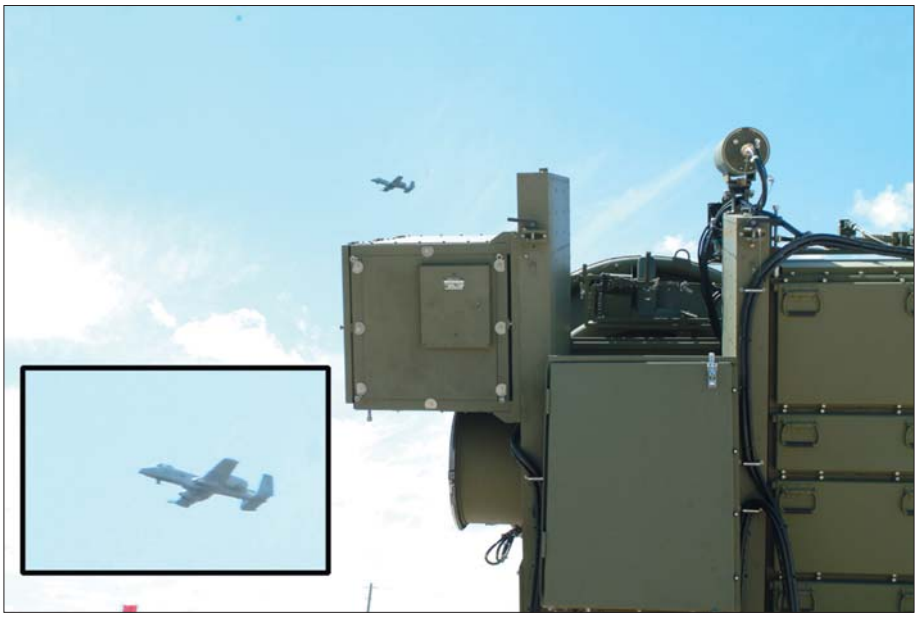
Range threat systems simulate the tracking systems of enemy missiles and guns and are used to train pilots to evade the tracking systems.

In the past, the systems were tested at Tobyhanna using a light, single-engine propeller aircraft and overflying commercial jet aircraft before delivery to the customer for further testing. Now the A-10 "Warthog" jet aircraft has been added to this comprehensive test plan.

"With the A-10, we test them to see if an aircraft is picking up threat emissions and the systems are tracking the aircraft properly," said Joe Costanzo, electronic integrated systems mechanic, Range Threat Systems Division. "We were using a prop aircraft, but the systems are built for jet aircraft. The systems would track the aircraft, but not very smoothly or for long distance because of the slower speed and size of the aircraft. We could actually see the turret of the VPQ-1 compensate for the angle of the aircraft as it tried to stay on track."

"The last MSQ-T43 system we tested here using commercial aircraft worked OK, but when the customer tested it using an F-16, it could not track as well at close range due to the faster speed of the F-16," added Ken Seymour, electronic integrated systems mechanic, Range Threat Systems Division.

Bob Wolak, chief of Command, Control and Computers/Avionics Support Division, Production Engineering Directorate, contacted Willow Grove Air Reserve Station to see if they could provide a pilot to



An A-10 Warthog executes a circular test pattern at about 287 mph to test an AN/MSQ-T43 Modular Threat Emitter's tracking ability and to validate its threat emissions. The test was the first of its kind held at Tobyhanna.

fly a jet aircraft for a comprehensive test that would be comparable to actual conditions.

COL Steven Sischo, commander of the 111th Fighter Wing, approved the flight and provided an A-10 Warthog piloted by CPT Jay Spohn. The test took place May 4. Technicians extensively tested the VPQ-1 and the MSQ-T43 as the A-10 flew overhead in various patterns and altitudes.

"Based on the equipment specs and performance test requirements, we had previously designed flight patterns that would fully exercise the tracking capabilities of each system," Wolak said. "These flight pattern descriptions were sent to CPT Spohn before the flight to ensure pattern compliance and minimize radio instructions. While CPT Spohn flew each route, he reported the number and changes of threats received. The systems performed flawlessly throughout the testing."

"The systems stayed locked on the aircraft, even when the A-10 was low and at close range, which was something they could not do well with the prop aircraft," Costanzo said.

Range Threat Systems Division will utilize this type of aircraft support extensively for future testing of these systems.

The VPQ-1 and the MSQ-T43 will be delivered to the customer, Eielson Air Force Base, Alaska, for further testing using different types of jet aircraft.

The MSQ-T43 simulates the radar transmitter of surface-to-air missiles. The VPQ-1 simulates anti-aircraft artillery tracking systems. The MUTES simulates multiple threat tracking systems. The systems are extremely complex. The overhaul process is measured in months.

Tobyhanna also performs complete overhauls on the AN/MST-T1V MiniMUTES, the AN/MPQ-T3 AutoTrack Radar, the AN/TPT-T1 (V) Unmanned Threat Emitter, the AN/MPS-T1 Band Sim, the AN/TPQ-43 Seek Score and the AN/MSR-T4 Threat Reaction Analysis Indicator System.

Tobyhanna Army Depot is the Defense Department's largest center for the repair, overhaul and fabrication of a wide variety of electronics systems and components, from tactical field radios to the ground terminals for the defense satellite communications network. Tobyhanna's missions support all branches of the Armed Forces.

Mr. Ricchiazzi is with the Tobyhanna Army Depot Public Affairs Office in Tobyhanna, Pa.

Teamwork stabilizes Black Hawk flights

by Kevin Toolan

TOBYHANNA ARMY DEPOT, Pa.—A team effort has developed a more efficient and economical process for depot repair of a critical helicopter component.

The new method helps to ensure the availability of the flight-critical stabilator amplifier used on Black Hawk helicopters, one of the workhorse aircraft of Operation Iraqi Freedom.

Tobyhanna shops and engineering personnel, working with Bill Askew, the U.S. Army Communications-Electronics Command's Logistics and Readiness Center Field Office at Tobyhanna, and Louis Fornicola, Aircraft Programs branch chief at the LRC, Fort Monmouth, N.J., developed and implemented a method that more quickly and economically repairs the stabilator amplifier's pitch rate gyroscope.

The gyroscope is a key component of the stabilator amplifier, commonly referred to as the "stab amp." The stab amp enables the stabilator, the horizontal airfoil at the tail of the helicopter, to operate properly. The function of the stabilator is to control the Black Hawk's pitch attitude in flight. Each Black Hawk is equipped with two stab amps.

"Simply put, the aircraft can't fly in automatic mode without stab amp operation. Southwest Asia OPTEMPO (operations tempo) has put a significant burden on the supply system," Fornicola stated. "Finding ways to repair assets that were once considered beyond economic repair, and consequently washed out of the system, can increase operational readiness."

The new process does reduce the number of gyroscopes previously determined to be beyond

economic repair, said Askew.

Previously, the depot was spending about $7,000 to replace the stab amp's gyroscope. Now, in many cases, a contractor can repair the gyroscope motor at about a quarter of the cost of purchasing a new gyroscope.

The Aircraft Survivability Equipment Division at Tobyhanna is the lead shop for the repair of the stab amp. With the new process, ASE Division technicians send the stab amp's pitch rate gyroscope to their counterparts in the Air Communications/Instrument Division for testing.

"Historically, if the technician determined the gyro to have a bad motor, the unit would be determined beyond economical repair. The intershop program (with ASE Division) benefits the stab amp program because we will be able to repair the gyroscope at a fraction of the cost of ordering a new one," said Dave Shuleski, chief of the depot's Air Communications/Instrument Division.

The test in Shuleski's division determines if the gyroscope failure is attributable to the gyroscope's circuit card, or if there is a more serious problem with the gyro motor itself.

"The technician can usually determine the gyro to be bad within the first few minutes of the operational test. When determined bad, the unit needs to be opened in order to troubleshoot the circuit card assembly. If the CCA proves to be good, the next logical determination is that the motor is bad.

"Troubleshooting a CCA can take from 15-30 minutes. When we find a bad card, the technician determines the bad components, replaces them. After reassembly of the gyro unit, the technician runs another operational check to prove the gyro assembly meets the test requirements," Shuleski explained.

If the test indicates the problem is a motor failure, the item is sent to a contractor for repair. Motor repair requires expensive, specialized equipment that was determined not economical for the depot to acquire.

Art Wilford, electronics mechanic, tests the gyroscope from a Black Hawk helicopter. A team effort has enabled the depot to more efficiently repair the gyroscope, which is part of the Black Hawk's stabilator amplifier, a flight-critical component of the Black Hawk. The new process reduces the cost to overhaul the component and reduces the number of items that are determined to be beyond economic repair.

Electronics Engineer Ken Stuccio, Avionics Support Division, located the contractor who now repairs the motor. "The most common failure in the stab amp is the pitch rate gyroscope. Using this process for rebuilding the gyroscope motor saves about $5,000 on every stab amp requiring this assembly," Stuccio said.

Overhaul workload on the stab amps has increased substantially over the last year, said Tony Gentle, chief of the ASE Division, primarily due to ongoing operations in Southwest Asia.

The depot also overhauls a Navy version of the stab amp. The depot will overhaul several hundred stab amps this year, saving hundreds of thousands of dollars using the new process.

Tobyhanna Army Depot is part of the U.S. Army Communications-Electronics Command. Headquartered at Fort Monmouth, N.J., CECOM's mission is to research, develop, acquire, field and sustain communications, command, control computer, intelligence, electronic warfare and sensors capabilities for the Armed Forces.

Mr. Toolan is with the Tobyhanna Army Depot in Tobyhanna, Pa.

Army depot's overseas communications repair mission continues

by Anthony J. Ricchiazzi

TOBYHANNA ARMY DEPOT, Pa.—Tobyhanna continues to deploy personnel in support of Operation Iraqi Freedom.

Four technicians in the depot's Single Channel Ground and Airborne Radio Systems Division, Communications Systems Directorate, spent nearly three months at Camp Arifjan, Kuwait, repairing SINCGARS, Vehicle Intercom Systems and Vehicle Intercom Communications systems.

"We left for Kuwait Nov. 16 and returned Feb. 13," said Bryan Califano, electronics mechanic.

"Our mission was to test and repair radios and intercom systems in vehicles."

Working with U.S. Army Materiel Command Logistics Support Element personnel, Califano, Brian

Gregory, electronics mechanic leader; Stephen Beck, electronics mechanic; and Aaron Morrison, electronics mechanic; began repairs on vehicles ranging from M1 Abrams tanks to Humvees.

They carried out repairs and tests to about 200 Abrams tanks alone.

"We reset and tested several radios," Califano said. We also replaced bad antenna cables."

The four were often separated, carrying out different duties. For example, Beck repaired several amplifiers. "The amps are used for long-range communications," he noted.

"We had a small shop and worked in a large staging area for vehicles from different units," Beck said. "One of the hardest parts of the mission was working inside the vehicles. There isn't a lot of room when you're trying to remove or install cables and other equipment."

Repair times varied from 20 minutes for an error-free test to hours if they found a major problem. They also had to contend with the weather.

"It was the rainy season and it would get muddy and sticky," Califano said. The temperature ranged from the upper 60s to lows in the 30s.

In appreciation of their work, all four were presented with a certificate by BG Robert M. Radin, commander of the AMC LSE for southwest Asia, and a certificate and commander's coin by LTC Scott N. Fletcher, commander, Combat Equipment Battalion–Kuwait.

Tobyhanna Army Depot is the Defense Department's largest center for the repair, overhaul and fabrication of a wide variety of electronics systems and components, from tactical field radios to the ground terminals for the defense satellite communications network. Tobyhanna's missions support all branches of the Armed Forces.

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Mr. Ricchiazzi is with Tobyhanna Army Depot's Public Affairs Office.

SUGGESTION FOR FIGHTING VEHICLE COMPONENT SAVES BIG BUCKS

by Michele Yeager

TOBYHANNA ARMY DEPOT, Pa.—Three employees of the Avionics/Intelligence Electronic Warfare Systems Directorate at Tobyhanna joined forces to brainstorm an idea that saved $489,240 in support of the Army's Bradley Fighting Vehicle.

Electronics Mechanic John Sylko and Electronics Workers James Bamert and Jeff Shuman, who work in the directorate's Electro Optic/Night Vision Division, shared a monetary award of $5,622 as a result of their approved suggestion submitted through the Army Ideas for Excellence Program.

While working on a component of the Tube-launched Optically-tracked Wire-guided II missile system for the Bradley Eyesafe Laser Rangefinder, the technicians were replacing a damaged mirror assembly by purchasing the next higher assembly at a cost of nearly $5,000.

But, by machining threads on the sleeve bushings from the Basic TOW missile system, the part would easily adapt to the newer system.

The Basic TOW, the very first version of the missile system, is now obsolete, explained Jack Barrett, division chief. "The TOW II incorporates improved optics and electronics to provide a better resolution and target tracking capability."

The TOW II is used to fire missiles to take out enemy tanks or other vehicles. When the weapon is fired, the gunner can track the missile to the target, making corrections as necessary. The weapon has a 99 percent verified target accuracy during actual use.

"It occurred to us that the old model shaft on a damaged Periscope Head Elevation Mirror Assembly was machineable up to new model standards," Sylko explained. "It was a common-sense kind of thing, even though it wasn't covered in the parts manual or the DMWR [Depot Maintenance Work Requirement]. This is much cheaper than purchasing the Elevation Mirror Assembly, as previously done."

The sleeve bushing is not a stand-alone item that can be purchased separately, according to Jim Rymond, an electronics technician in the Productivity Improvement and Innovation Directorate, who evaluated the suggestion.

Modifying the sleeve bushings available from the Basic TOW makes it possible to use them for the TOW II's Integrated Sight Unit.

An ISU is a turret–mounted optical system that provides the means for acquiring and tracking stationary or moving ground targets. It provides the gunner with a full-time sighting system. It has both a day–time visual optical telescopic sight and a night–vision sight that provides infrared (heat) targeting information.

The tear–down program for the Basic TOW makes a large number of parts available for modification at only a small cost to the depot, Barrett said. "Of course, many other parts are not modified at all, but are still reusable in the TOW II."

Stanley Fisher, chief of the Bradley Fighting Vehicle Branch, oversees the work of Bamert, Sylko and Shuman, who assemble and test the full ISU. They also perform purging and final preparation duties prior to delivery of the units to the customers.

In addition to the cost savings, the improved process allows the depot's Bradley Team to get the units to the customer in a timelier manner and maintain the fleet of vehicles going out to the field, Sylko said.

"I may have been the 'guiding hands' with the concept and the AIEP submission, but it wouldn't have been successful without the research and write-ups by Jim and Scotty," he added. "I've had several suggestions approved in the past, so I knew 'the who and the how' of the paperwork. But I wanted others in the shop to get involved in the program."

Jeff (Scotty) Shuman, electronics worker, uses a clamshell bearing puller to remove the old basic shaft on a damaged Periscope Head Elevation Mirror Assembly. The assembly is a component of the Tube-launched Optically-tracked Wire-guided) II missile system for the Bradley Fighting Vehicle's Eyesafe Laser Rangefinder.

"Creating a team for all of us to work together was the perfect way to do it," Shuman said. "We all had thoughts on the idea and were able to bring various views to the table, including the machine shop, where the modifications were performed."

"It was important to involve as many people as necessary so we could accomplish this quickly and stay focused on getting the units to our customers," Sylko said.

Ms. Yeager is with Tobyhanna Army Depot Public Affairs Office, Tobyhanna, Pa.

LEAN EASES WORK PROCESS, INCREASES CUSTOMER SAVINGS

by Michele Yeager

TOBYHANNA ARMY DEPOT, Pa.—What used to take eight days now takes four and a half days. What used to take place in two distant shop areas is now accomplished in one central location.

What used to cost $5,880 now costs $4,576 – a savings of $1,304 per unit that is passed on to the U.S. Navy, one of Tobyhanna's prime customers.

These efficiencies are a direct result of a Lean transformation initiative that took place in the Transponder Division of the depot's Avionics–Intelligence Electronics Warfare Systems Directorate.

The basic concept of Lean is to eliminate non–value added steps within a work process to meet and enhance production requirements, said Bob Katulka, director of Productivity Improvement and Innovation.

"Through a series of RIEs [Rapid Improvement Events] and in–depth analyses of the physical layout of the production floor and the work flow process, unnecessary steps are identified and eliminated," he said. "Then, Lean principles are implemented, resulting in a more efficient work flow process that saves both time and money."

About 1,000 AN/APX–72 transponders are received here for repair each year, or an average of 100 units per month, for use in Army and Navy helicopters such as the UH–60 Black Hawk and CH–47 Chinook.

An APX–72 Transponder is part of an interrogator system that responds to transmitted signals to identify aircraft as friend or foe.

Transponder workload used to be accomplished in two separate areas of the depot.

"On one side of the warehouse, we performed electrical work, while mechanical work was done on the other end," explained John Ross, chief of the Transponder Division. "We were using 35 racks to hold the work in process, plus 15 cabinets to store necessary parts. Now, after Lean implementation, only three racks and five parts cabinets are needed."

The workload and the employees completing it were relocated to one area. The first step was to create a one-piece floor operation in one central location, Ross said.

"Work areas were separated and labeled into five work stations with work flow traveling in a counter-clockwise motion through each step," he added. "Each station now has a mechanical and an electronics technician, eliminating the need to transport the units to various areas."

Visual management is another positive aspect of Lean, said Electronics Mechanic Ryan Stephenson, who temporarily served as a work leader in the Transponder Division.

"One of my main duties included daily work station production reports," he explained. "Each APX–72 end item, along with its subassemblies, has an assigned physical location within the work station. As a result of Lean implementation, the leader no longer has to interrupt the employee to take a tally. It also makes it much easier and quicker to assess over– and under–production for the leader to manage accordingly."

Additionally, the division developed new easy–to–follow work standards and eliminated Standard Operating Procedures and work instructions.

"All step–by–step procedures for repairs and test procedures are simplified to the point that anyone can understand them and follow them with minimal assistance," Ross said. "It's also a great training tool for our new employees."

Finally, the division added a "sick bay," a rack used to store transponders awaiting parts or special attention. "If one of the units has a

major problem, we place it in the sick bay. This keeps the rest of the workload flowing, instead of wasting time focusing on just one transponder," Ross said.

These streamlined processes – standardizing work flow, establishing order, sustaining and eliminating wasteful practices such as redundancy, over production and unnecessary motion – are saving the customer money and contributing to faster turnaround times.

Lean initiatives are proving successful and will continue throughout the depot, Katulka said.

"Applying Lean concepts not only provides direct savings to our customers, but it also enhances employee working conditions and overall job satisfaction," he said. "And most importantly, it increases the depot's competitive posture, which is critical in today's highly dynamic defense environment."

Employees earn award for Lean implementation

The 38 employees in the Transponder Division each earned a $250 suggestion award for their on–going efforts to continuously improve their support and performance on the AN/APX–72 transponder.

Employees and management demonstrated determination in accepting and implementing new process improvement concepts to include Lean Thinking, said Bob Reese, the Army Ideas for Excellence Program manager.

"The result included significant savings to the customer and delivery rates that optimize warfighter readiness," he said.

Depot continues to *Lean* forward

- Lean implementation at Tobyhanna began in June 2002.
- 111 Lean events have been conducted in both industrial and administrative areas.
- Administrative events include: travel order processing, ID badge processing, facility maintenance work order processing and others.
- Industrial Lean events include 14 value streams, totaling about $101 million in Fiscal Year – 2004 orders. Numerous events have been conducted on industrial processes that are common to many value streams, such as metal plating, cleaning and painting.
- 552 individuals have experienced Lean on–the–job training by participating in Lean events.
- Personnel trained represent about 20 percent of the current work force and 26,150 labor hours of training.
- To date, Tobyhanna has realized a net benefit of $14.1 million ($6.9 million savings and $8.2 million cost avoidance minus $1 million in contract and labor costs).
- Tobyhanna projects Lean efficiencies will result in about 72,000 labor hours saved in FY–04. In addition to dollar savings, the depot has also realized significant improvements in repair cycle time.
- Significant challenges to lean implementation at Tobyhanna remain, including: fluctuations in workload, Logistics Modernization Program implementation and cultural change management.

Ms. Yeager is with the Public Affairs Office at Tobyhanna Army Depot, Tobyhanna, Pa.

Kenneth Cottrell, electronics mechanic, gives an AN/APX-72 Transponder a final test at Tobyhanna Army Depot. Lean initiatives have cut the cost and time to repair and test the systems.

Depot assists Navy satellite communications mission

by Anthony Ricchiazzi

TOBYHANNA ARMY DEPOT, Pa.—Technicians here provided critical additional support while on a first–ever mission to assist the U.S. Navy Pacific Fleet Command install a Military Strategic Tactical Relay into its new home.

Chris Ackerman, electronics mechanic leader; John Martz, electronic integrated systems mechanic; Norm Krotz, electronics mechanic; and Thomas Gibbon, electrician; traveled to Camp Smith, Oahu, Hawaii, in February to move and test a MILSTAR Air Force Terminal Remoting System.

MILSTAR provides direct satellite communications support to mobile forces that is autonomous, worldwide, highly jam resistant and secure.

The system allows global voice, data and imagery transmissions, including global video teleconferencing.

"We tested the system after it was relocated and reinstalled into the [Pacific Command's] new headquarters building," Ackerman said. "Our mission was to test the MILSTAR

Chris Ackerman connects a cable to a Military Strategic Tactical Relay high–powered amplifier mock up at Tobyhanna Army Depot. The mock up is being installed at Tobyhanna to test MILSTAR components, software upgrades and modifications. The mock up will save time and resources spent on trips to MILSTAR sites and allow technicians to write repair, upgrade and modification procedures. Ackerman is an electronics mechanic leader in the MILSTAR Division, Satellite Communications Systems Directorate.

operator's console and electronics racks."

The team also installed 32 cables, which they custom–built with connectors prior to re–installation. Custom cables are needed for site–specific length requirements.

The team realigned fiber optics components and would have conducted troubleshooting tests if problems surfaced.

"There were no problems," Martz said. "They were thrilled with our work and told us that the system never ran as good."

They repaired two subsystems after contractor technicians completed tests on them.

One was the systems hotline telephone system, which had stopped functioning before the move due to a bad component. The other was the humidity modification in the MILSTAR shelter's antenna support structure.

They also tested hardness survivability.

"All the components in the other satellite systems were moved at the same time, but they had to wait for us to finish before operations testing," Ackerman said. "We had a delay because one of the racks was too heavy for the lift equipment, so they had to hire another contractor."

Despite the complex coordination needed to make the move, and the delay due to the insufficient lift equipment, the team finished several days ahead of schedule and returned on March 12.

Tobyhanna Army Depot is the Defense Department's largest center for the repair, overhaul and fabrication of a wide variety of electronics systems and components, from tactical field radios to the ground terminals for the defense satellite communications network. Tobyhanna's missions support all branches of the Armed Forces.

Mr. Ricchiazzi is with the Tobyhanna Army Depot Public Affairs Office in Tobyhanna, Pa.

OF INTEREST

ARMY CHIEF OF STAFF DEPLOYMENT EXCELLENCE AWARD

by Henry H. Johnson

The Army's Deployment Excellence Award program annually recognizes Active Army, National Guard and Reserve units and installations for outstanding deployments and deployment support accomplishments.

The 2004 winners were announced April 30, 2004, and the awards presented by Army Vice Chief of Staff on June 22, 2004, at the 2004 ceremony in Washington, D.C.

The DEA program is open to any unit or installation that have deployed or supported a training or contingency deployment during the competition year (Dec. 1 – Nov. 30). Units and installations are encouraged to participate in one of five categories: large unit (battalion and above), small unit (company and below), supporting unit, installation and operational deployment. For all categories except operational deployment, eligible units and installations submit self-nomination packets to their major command. MACOMs forward their top unit packets to an Army level evaluation board that determines semifinalists. A team of deployment specialists visits selected units, validate unit deployment practices, and determine the best unit in each DEA category.

The operational deployment category is open to all units that deploy on operational deployment missions (war on terrorism, peacekeeping rotations, humanitarian missions, etc). Two units are recognized annually — one large unit (battalion or above) and one small unit (company or below). MACOMs nominate units and a deployment observation team from the Deployment Process Modernization Office will observe and score the deployment. This year MACOMs nominated ten units in the operational deployment category.

The 2004 Army Deployment Excellence Award Evaluation Board convened Feb. 17 – 27, 2004. This year the board selected 20 units as semifinalists and three teams of deployment specialists conducted onsite visits worldwide from March 17, 2004 through April 14, 2004 to validate nomination packets. The board score combined with the validation team's score determined winners.

The 2005 DEA competition is open to all units and installations:

DEA competition period Dec. 1, 2003 - Nov. 30, 2004

MACOM nomination packets are due to the DEA board Jan. 31, 2005

DEA board convenes Feb. 14 – 25, 2005

DA releases message announcing semifinalists – March 11, 2005

DEA validation teams visits March 15 – April 15, 2005

DA releases message-announcing winners - April 22, 2005

DEA awards ceremony – June 4, 2005

For additional information, visit the Deployment Process Modernization Office web page (http://www.deploy.eustis.army.mil/DEA/default.htm) to download or to view the awards evaluation criteria, checklists, and sample nomination packet; or contact the DEA Program Manager, Henry Johnson, Building 705, Room 221, Fort Eustis, Va. 23604, DSN 826 -1833, or commercial 757-878-1833.

Mr. Johnson is retired after 30 years active duty having served as a command sergeant major and transportation systems specialist assigned to the Deployment Process Modernization Office at Fort Eustis, Va. He is currently serving as HQDA Deployment Excellence Award program manager.

Army Signal Units Receive Naval Award

by SGM M. William Petersen

FORT HUACHUCA, Ariz. – A first for a United States Army Signal unit happened when two units from the 11th Signal Brigade, U.S. Army Network Enterprise Command/9th Army Signal Command, were awarded the Naval Presidential Unit Citation for supporting the I Marine Expeditionary Force during Operation Iraqi Freedom.

The ceremony marked the 34th time the Naval Presidential Unit Citation has been presented since its creation, the first time it has been awarded since 1968.

Soldiers of 86th Signal Battalion and C Company, 40th Signal Battalion were recognized during an award ceremony March 24, at Fort Huachuca, Ariz.

Representing the Marine Corps, LTG Robert M. Shea, director of Command, Control, Communications and Computer Systems for The Joint Staff, hung the streamer on each unit's guidon.

"A Presidential Unit Citation carries accolades of the commander in chief. Few units receive this award," Shea said.

As a Marine Corps communicator, Shea identified the crucial need for flexible, dependable and rapid communications on the battlefield.

"I can't state the absolute necessity of things taken for granted at home, like picking up a phone and having a dial tone …. It becomes a matter of life and death," Shea said. "You were truly an enabler on the battlefield."

The two 11th Signal Brigade units, Co. C, 40th Signal Battalion and 86th Signal Battalion were presented battle streamers along with IMEF for their accomplishments in Iraq from March 21 to April 24, 2003.

"These Soldiers represent the 1,800 members of the 11th Signal Brigade Thunderbirds, most of whom have been deployed for a very long time, and all of whom have answered the nation's call in the Global War on Terrorism," said COL Brian R. Hurley, commander of

The 11th Signal Brigade, USA Network Command and 9th Army Signal Command received a first when two units were awarded the Naval Presidential Unit Citation for supporting the I Marine Expeditionary Force during Operation Iraqi Freedom.

11th Signal Brigade. "This demonstrates our true Joint capability and, more importantly, recognizes the heroic efforts of these outstanding soldiers."

The Secretary of the Navy — in the name of the President — awards the Naval Presidential Unit Citation to any ship, aircraft, or naval unit, or any Marine Corps aircraft, detachment, or higher unit for outstanding performance in action against an armed enemy of the United States on or after December 7, 1941.

To justify the citation, the unit must have clearly rendered itself conspicuous by action of a character comparable to that which would merit the award of a Navy Cross to an individual. The citation is designated to recognize specific acts of heroism on the part of the unit acting as a team.

The 11th Signal Brigade, headquartered at Fort Huachuca, Ariz., provides tactical communications capabilities such as secure and non-secure phones, Internet, video teleconferencing and satellite communications. Thunderbird Soldiers supported Operation Iraqi Freedom from sites throughout Southwest Asia including Iraq and Kuwait, and some are still deployed in support of the Global War on Terror.

SGM Petersen, 11th Signal Brigade Public Affairs, Fort Huachuca, Ariz.

Initiatives to improve education system that has served the Army well

by Joe Burlas/Army News Service

Editor's note: ***This is one of a series on the 17 Army focus areas. This one focuses on leader development and education.***

WASHINGTON — Today's methods of training the force and growing leaders are not broke, but they do need some tweaks to ensure continued success on tomorrow's battlefields, according to the findings of Task Force Leader Development and Education.

Leader development and education is one of 17 focus areas Army Chief of Staff GEN Peter Schoomaker has directed the Army to examine closely for recommendations to channel Army efforts in winning the Global War on Terrorism and increasing the Army's relevance and readiness.

"We have what I consider a world-class Army and world-class leaders today — you have to recognize they are products of the (education) system we have in place today," said BG James Hirai, Army Command and General Staff College deputy commanding general. "Recognizing that level of competence, we still need to grow. We need to anticipate and prepare for the unknown."

As part of its charter, the task force reviewed the findings from the officer, warrant officer, noncommissioned officer and civilian Army Training and Leader Development Panel surveys that were conducted over the past few years. The task force validated the majority of those findings, Hirai said.

However, the task force did not limit itself to just validating past studies. It has taken a broad look across the Army, Hirai said. He talked about what the task force has determined to date under several categories.

Lifelong learning

While the Army has long espoused a culture of lifelong learning in leaders of all levels, accountability for that lifelong learning has not been well defined. The individual Soldier, the organizations the Soldier belongs to during an Army career and the institution itself all have roles to play in that lifelong-learning journey, Hirai said. Those roles need to be clearly defined and understood by each player, he continued.

Also, there must be some form of formal standards-based assessment and feedback mechanism in place to determine if lifelong-learning goals are being met and to adapt to changing learning needs or emerging technologies.

High-payoff initiatives

The task force is recommending that Army schoolhouses move toward a common scenario based upon today's asymmetrical threat. Working off a common scenario may allow different career-field training centers to build synergies in conducting collective Joint exercises via linked simulators and computer networks, Hirai said.

Another high-payoff initiative the task force recommends is conducting a formal reoccurring training-needs assessment across the Army, Hirai said.

Education system

Task Force Leader Development and Education is also reviewing content delivery and timing of training. Part of that is determining when a Soldier should get resident training and the duration of that training.

"The question is what type and amount of training does the Soldier or leader need to be comfortable with in current and future operations," Hirai said.

Joint-operations training is one area that should be done at a lower level than most Army school curriculum — likely at the basic qualification course, the general said.

"Joint interoperability, Joint operations (training), is not at the right level," Hirai said. "We are finding in the contemporary operating environment today that Joint operations are done by junior leaders."

Not all institutional training may need to be done at the schoolhouse, Hirai said, especially with off-the-shelf technology that allows for more distance education than available 10 years ago.

Leveraging technologies

Leveraging technologies includes distance learning via linked simulators and distance learning via the Web, but it is more.

"We are looking at the human dimension — how people learn," Hirai said. "It's about identifying what leaders and Soldiers have to do and how to most effectively deliver the training they need to do those

tasks."

Single education proponent

Agreeing wholeheartedly with the Civilian Army Training and Leader Development Panel finding, the task force is recommending a single education proponent for all Soldier and Department of the Army civilian training.

Under the current system, civilian training is managed through the Office of the Deputy Chief of Staff for Personnel, G-1, with major commands footing the bill. Soldier training management is an Office of the Deputy Chief of Staff for Operations, G-3, responsibility, with the Human Resource Command paying travel and other costs.

Hirai said he envisions a single organization responsible for managing the training of both the military and civilian workforces. Whatever that organization ends up being, it would still need to coordinate with G-1 and G-3 to ensure legal mandates are met.

As far as civilian leader development, Hirai said there are many courses out there, but none tied to career progression. The task force recommends the Army establish a specific civilian leader-development program.

Integration

Task Force Leader Development and Education has been in close contact with the other area task forces, Hirai said, as what each finds often impacts other areas.

The focus areas are all linked and all designed to improve the readiness of the Army. When one of the other task forces recommends a new piece of equipment or process, Army training will play a role in ensuring Soldiers know how to use that equipment or procedure, Hirai said.

"Current and past leader development and education programs have served our nation very well," Hirai said. "Our leaders, in fact, have been pretty well prepared to plan and execute complicated operations in combat. We are building on success."

JOINT AND EXPEDITIONARY FOCUS: ARMY GETS THERE FAST BUT NOT ALONE

by Sgt. 1st Class Marcia Triggs

Editor's note: *This is one in a series on the 17 Army focus areas. This features "a Joint and expeditionary Army with a campaign-quality capability" — formerly called Joint and expeditionary mindset.*

WASHINGTON – The Army's chief and acting secretary were asked by a member of the Senate Armed Services Committee if seamen and airmen were being requested to perform Army duties in Iraq and Afghanistan.

"I'm not aware of any such request. But we're looking for capabilities across the force to relieve the Army," said Army Chief of Staff Gen. Peter Schoomaker while testifying on Capitol Hill last month. "We fight Jointly … it makes perfect sense for the other services to give the Army a reprieve."

Schoomaker spent only a couple of minutes trying to explain to members of Congress that the Army is part of a Joint force, but he has given Training and Doctrine Command a long-term directive to architect a campaign that will get Soldiers to embody a Joint and expeditionary mindset.

"A Joint and expeditionary Army with a campaign quality" is one of the Army's focus areas. "Basically we want to maximize each service's capabilities and prepare leaders and Soldiers to fight in uncertain and ambiguous environments. The Joint and Expeditionary Task Force is the lens through which we filter many of our transformation efforts," said Bob Simpson, deputy of the Joint and Expeditionary Task Force.

Joint training

Joint Forces Command, in concert with the services, is refining the nation's Joint National Training Capability, which will integrate Joint training similar to the way the Army has integrated combined-arms training at its combat training centers for some years, Simpson said. And TRADOC is very much involved in the effort, Simpson added.

JNTC was first conceived in 2002 but is now taking a more robust approach to train Joint forces, according to the U.S. Joint Forces Command Website. Included in the training will be real people in real locations using real equipment; real people in simulators; and simulated entities in a simulated environment, according to the Website.

DoD is not constructing another training center but is combining live, virtual and constructive training to create a Joint training capability that will eventually include capabilities resident at the installation level, Simpson said. However, right now the focus is starting the capability at Fort Irwin, Calif., and the other services' Western ranges, he said.

Joint communications

Another example of the transition to Joint thinking is Blue Force Tracking, a command-and-control system. Blue Force Tracking is an example of how junior military persons are talking to each other now, officials said. From company- to theater-level commanders, Blue Force Tracking is being used to provide situational awareness and digital command and control for the Army, Marine Corps and coalition forces, said Michael Lebrun from the Office of the Assistant Secretary of the Army (acquisition, logistics and technology).

"The core of the program is its software," Lebrun said. "Inside the platform is a digital map that gives you your location. It can also tell you where any other Blue Force Tracking-equipped platform is in the area of operations."

It's the first part of reducing the risk of fratricide, Lebrun said. It provides better information on where friendly forces are, and it allows forces to plan better, react better and do a lot of things to mitigate the risk of fratricide, he concluded.

In the near future, hand-held versions of Blue Force Tracking will be fielded in Iraq, Lebrun said.

Joint mindset

The Army has included Joint

training in its school for senior officers for a few years now, but the service will soon start teaching Joint tactics earlier in the careers of both commissioned and noncommissioned officers, Simpson said. Leaders have to see themselves as members of a Joint profession, he said. The specifics are being decided in a consensus environment with the other services, Simpson added.

"One of the things about each of the services is that they have unique cultures, and one thing that defines a culture is language," Simpson said. "So part of this process will be to define a common Joint language. An important part of the process is integrating service and Joint doctrine."

Warriors first (expeditionary)

The second piece of the focus area is expeditionary, and Simpson said that Soldiers must realize that the Army's normal state is to be at war.

"We first started trying to change the mindset of the Soldier to a Joint and expeditionary one by introducing them to Warrior Ethos and the Soldiers Creed," Simpson said. "The creeds reinforce that they are part of a great Army team."

"I am a Warrior and a member of a team … I stand ready to deploy, engage and destroy the enemies of the United States of America," states the Soldiers Creed. These words will subconsciously remind Soldiers and leaders they have to be comfortable with uncertainty, Simpson said.

"Soldiers can't expect to go into a theater where there is an iron mountain of logistics and every precondition has been set," Simpson said. "We don't have a front or a rear; all our Soldiers deploying into any theater from now on will be in harm's way, regardless of where they are on the battlefield."

TRADOC has the lead and is working to change the Army's doctrine, organization, training and leader development. However, Simpson said, every commander has the responsibility to start training all Soldiers to be riflemen first.

Acronym QuickScan

ABCS – Army Battle Command System
AIEP – Army Ideas for Excellence Program
AMC CSLA – Army Material Command Communications Security Logistics Activity
AMC LSE – Army Materiel Command Logistics Support Element
AN/VRC - Army/Navy Vehicular Radio Configuration
APM – Assistant Project Manager
ARCENT – Army Central Command
ASIP – Advanced SINCGARS Improvement Program
ASE – Aircraft Survivability Equipment
AV-IEW – Avionics–Intelligence Electronics Warfare Systems
BCTP -- Battle Command Training Program
BELRF – Bradley Eyesafe Laser Rangefinder
BER – beyond economic repair
BOS – Battle Operating Systems
C4 – command, control, communications and computers
CAC-T – Combined Arms Center for Training
CAISI – Combat Service Support Automated Information Systems Interface
CCA – circuit card assembly
CECOM – Army Communications-Electronics Command
CENTCOM – Central Command
CFLCC – Coalition Forces Land Component Command
CMN – Coalition Multinational Division Network
COTS – commercial-off-the-shelf equipment
CPA – Coalition Provisional Authority
CSSAMO – Combat Service Support Automation Management Officer
CTC – Combat Training Centers
DAMA – Demand Assigned Multiple Access
DEA – Deployment Excellence Award
DISN – Defense Information System Network
DKETs – Deployable Ku-Band Earth Terminals
DMS – Defense Message System
DMWR – Depot Maintenance Work Requirement
FM – frequency modulation
FY – Fiscal Year
GIG – Global Information Grid
GPS – Global Positioning System
HCLOS – High Capacity Line-Of-Sight Radios
HMMWV – High-Mobility Multipurpose Wheeled Vehicle
ID – identification
ID – Infantry Division
IED – improvised explosive device
IP – Internet protocol
ISEC – Information Systems Engineering Command
ISU – Integrated Sight Unit
IT – information technology
JFCOM – Joint Forces Command
JNCT – Joint National Training Capability
KICC – Kuwait Iraq C4 (command, control, communications and computers) Commercialization
LAR – logistics assistance representative
LOS – line-of-sight
LRC – Logistics and Readiness Center
MAFTRS – MILSTAR Air Force Terminal Remoting System
MARS – Military Affiliate Radio Station
MILSTAR – Military Strategic and Tactical Relay
MUTES – Multiple Threat Emitter System
MWR – Morale, Welfare and Recreation
NET – network
NIPRnet – Non-classified Internet Protocol Router Network
OPTEMPO – operations tempo
PEO EIS – Program Executive Office-Enterprise Information Systems
PM DCASS – Project Manager, Defense Communications and Army Switched Systems
PM DCATS – Project Manager, Defense Communications and Army Transmission Systems
PM DWTS – Product Manager, Defense Wide Transmission Systems
PM WIN-T – Project Manager, Warfighter Information Network – Tactical
PM TRCS – Project Manager, Tactical Radio Communications Systems
RECON – reconnaissance
RETRANS – receiver transmitter
SATCOM – satellite communications
SEN – small extension node
SINCGARS – Single-Channel Ground to Airborne Radio Systems
STL – Standard Teaching Locations
TAMSCO – Technical and Management Services Corp.
TCA – Transformational Communications Architecture
TDMA – Time Division Multiple Access
THSPDN – Tactical High Speed Data Network
TMS – Tactical Message System
TOW – Tube-launched Optically-tracked Wire-guided
VIS – Vehicle Intercom Systems
VOIP – voice over Internet Protocol
VSAT – Very-Small Aperture Terminal
VTC – video teleconference
USAISEC – U.S. Army Information Systems Engineering Command

(Chief of Signal's comments continued)

allow him or her to execute collective training and ensure a UEx "enterprise" can be achieved on the battlefield.

This is a clear and major change to how we've done business. Under this structure, although there will be more Signal Soldiers in a UEx than in one of today's divisions, those Soldiers will no longer be in the familiar division Signal battalion. Responsibility for the Network will extend to every maneuver and supporting UA commander, with responsibility for pulling it together at the UEx G6.

The importance of the Regiment's Functional Area officers is reflected in their increased numbers, too. The rapid pace of change has made it clear that the way we bring on our Functional Area officers Army wide has to change. We need to produce FA officers earlier, and we'll have to figure out how to do that. Total numbers of warrant officers, 74Bs and 31Us will also increase. New equipment and technology fielded to the force in the future may actually reduce total Signal presence in the UEx and UAs, but the dynamics of organic versus "chopped" will remain.

What emerges from these changes are an increased imbedded presence of Signal Soldiers across the force, vastly increased command opportunities at the captain level, and vastly increased major branch qualification positions in the UAs and the UEx. The Signal Regiment will retain healthy battalion command opportunity in the UEy in both theater tactical and strategic Signal battalions. The result of all of these changes will be increased readiness of our combat formations, increased emphasis and absolute reliance on the Network, greater ability to deliver network operations for our Army, and a streamlined, more efficient fighting force.

In the schoolhouse, we're right now looking at how the training base will need to transform in order to deliver the right training, integrate new equipment coming to the force (such as 3ID is being fielded) right now, cover down on joint imperatives in officer and non-commissioned officer training, and fully train NETOPS (information assurance, information dissemination management and network management). Both the Officer Education System and NCOES are being revised to better reflect what our Soldiers in the field need to know. NCOs scheduled for an NCOES class will be afforded that opportunity but under the "Train, Select, Promote" methodology, instead of the old "Select, Train and Promote." You'll hear much more from the command sergeant major on this subject.

You have read in previous editions what your Regiment is doing in Lifelong Learning (uit.gordon.army.mil). Signaleers at all grades will require more training more often during their career. We are building an essential enabling capability for our Soldiers to reach back to training from anywhere. The infusion of new technologies and structure into our combat formations and organizations and the ability to provide training virtually are also causing us to re-look our total MOS structure.

As the CSA makes decisions that clarify our path to the future, be attentive to Army messages that inform the force of those decisions and what they mean to the Army. We will try to interpret them in terms of impact on the Signal Regiment, and will stay in touch with you. We want to know what you think and we want to hear your ideas. As I've asked many, many times, "What does the Regiment think?" Now, more than any other time since I've become your Chief of Signal, that question is essential. I am convinced of the need for the changes we're seeing in order to support the war on terrorism while, at the same time, provide the best possible environment for our Soldiers and their families. We will go through some turbulent times in the near term, but will come out a better Army in the future. Your Signal Regiment will remain a vital part of that team.

Acronym QuickScan

*ASCC – Army Service Component Command
C2 – command and control
CSA – Chief of Staff of the Army
CSM – Command Sergeant Major
FA – Functional Area
HQ – Headquarters
NETOPS – Network Operations
NCO – non-commissioned officer
NCOES – Non-Commissioned Officer Education System
MOS – Military Occupational Specialty
OES – Officer Education System
SEN – Small Extension Node
UA – Unit of Action
UA-UEx – Unit of Action-Unit of Employment(x)
UA-UEy – Unit of Action-Unit of Employment(y)

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ARMY COMMUNICATOR
USASC&FG
ATTN: ATZH-POM
Fort Gordon, Georgia 30905-5301

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